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SANITATION AND PROGRESS.*

WALTER WYMAN, M.D.

SURGEON-GENERAL, U. S. MARINE-HOSPITAL SERVICE.

WASHINGTON, D. C.

Some four years ago, at the meeting of this Congress in the City of Mexico, I had the honor of addressing you upon the subject of "International Responsibility with Regard to Epidemic Diseases." Quite in line with the thoughts then expressed, I have chosen for my subject to-night "Sanitation and Progress," and it will be my effort to show the interdependence of municipal, national, and international effort in the great undertaking of the elimination of contagious disease, and that the twentieth century should witness this achievement.

Each morning I open on my official desk a package of newspaper clippings, containing notices of the prevalence of the several contagious diseases throughout the whole United States; and, as I note the varying recurrence of smallpox, diphtheria, typhoid fever, and scarlet fever, the notes upon consumption, the alarms concerning yellow fever and the bubonic plague, the thought which is impressed upon me is how seriously are we lacking in proper effort in suppressing these suppressible diseases. Nothing seems easier to me than the prevention or suppression of smallpox. In vaccination we have an absolute preventive, and in the glycerinized lymph we have a safe inoculating material absolutely devoid of the danger of exciting undue inflammation. Thus a mere scratch or a needle puncture insures, without discomfort, protection from one of the most loathsome and disfiguring diseases known. Even after smallpox has become epidemic, the methods by which it may be rapidly and surely suppressed have been so frequently demonstrated as to become now almost a matter of mere routine.

The antitoxin for diphtheria has long passed the experimental stage and is now justly regarded as a specific—a trusty addition to the armamentarium of the physician and sanitarian.

In the treatment of the other diseases mentioned, we have for bubonic plague a specific cure and preventive, and are certainly on the verge of the discovery of specific remedies for both tuberculosis and typhoid fever, but even without these specific remedies the nature of the diseases are thoroughly understood and the methods of the prevention of their spread are accurate and well known.

Then why do these diseases persist? The answer is plain. It is that sanitary administration has not kept pace with scientific knowledge. It is also evident that this scientific knowledge is not so widely diffused as it should be, even among those of whom we have a right to expect it. It is evident that we are not making "use of those means which the God of Nature has placed in our power."

* Read before the Third Pan-American Medical Congress, held in Havana, Cuba, Feb. 4-7, 1901.

MUNICIPAL SANITATION.

With regard to cities, there is a marked necessity of a strong public sentiment requiring that municipal cleanliness shall rank as one of the foremost features of municipal government. This is a field, not for the national government, but distinctively for the states and municipalities, whose degree of sanitary excellence is a fair exponent of their civilization and culture, for each state and each municipality has, and will continue to have, a degree of sanitary excellence commensurate only with the demands of its own people.

We have here a striking illustration of the fact that our governments are governments of the people. It is, therefore, necessary to cultivate among the people a demand for municipal sanitary excellence and as great an abhorence of municipal filth or neglect of sanitary engineering as there is of uncleanly dwellings or of uncleanliness of person.

A good water-supply, perfect sewerage and disposal of garbage, good street paving and street cleaning, should be the first boast of every municipality. Let these be pointed to with the pride which is commonly bestowed upon great public institutions and buildings. I see no reason why slums should be allowed in any city. Relatively speaking, too much attention is paid to public parks and handsome municipal buildings. The city's improvements should be in the alleys, around the docks, in the tenement-house quarters, and great as may be the appreciation of public art as manifested by statues and public gardens, and of the parks and the boulevards, let these wait upon the less showy but more important features of municipal life.

Recently I was on a board of three, the other two members being noted architects, to decide upon plans for the great government hospital for the insane, near Washington, Congress having appropriated $1,000,000 for doubling the capacity of the present institution. In looking over the numerous plans and sketches submitted by the half-dozen competitors, I was impressed with the promptness with which these two noted architects pounced upon all faults relating to light and ventilation, particularly of the lavatories, quickly throwing out as unworthy of further consideration those plans which placed the toilet-rooms in dark or badly ventilated positions. This illustrates the advanced modern idea, particularly when you reflect that formerly any dark or out-of-the-way place was considered proper for these necessities of habitation. So, too, in practical hospital work, it has been my observation that dark closets are wont to be the repositories for old mops, rags, and dirt, so that it was my rule, when engaged in the management of hospitals, to paint the darkest and worst closets a pure white, making immediately perceptible

the slightest trace of dirt or filth. The trouble I had experienced with these closets soon vanished.

These illustrations will serve with regard to cities. The chief attention should be centered upon the worst parts of the city. The sewerage, paving, light and ventilation of the worst sections should receive the first and most constant attention. In support of this idea, I quote from an article written five years ago by Dr. John S. Billings, who says:

As regards Asiatic Cholera, typhoid fever, various forms of diarrheal and dysenteric diseases, and diphtheria, our knowledge of their causes, means of communication and prevention is much in advance of the actual practice of most communities, mainly because the methods which are known to be effective to secure constantly pure water supplies and the satisfactory removal and disposal of refuse and excreta require considerable sums of money to establish and to maintain, and the public has not yet arrived at the conclusion that such expenditure is wise and proper and that taxation for such purposes is necessary to secure the prosperity of a community.

A very considerable part of the excess of death rates in a city is due to the poverty of the inhabitants of certain sections of it. In certain parts of all large cities there are to be found a number of people who are insufficiently fed and clothed and who are huddled together in such a way that cleanliness, decency and morality are difficult or impossible to obtain. Here congregate the idle and intemperate, the tramps and loafers of the country, the hereditarily indolent and vicious classes. Mingled with them and living under much the same conditions are many honest and industrious people who are living from hand to mouth; the daily wage earners to whom sickness means recourse to the public hospitals and loss of means to earn their own subsistence. The death rates in these quarters are fifty to one hundred and fifty per cent. greater than those of the better class of population; the average duration of life is from ten to fifteen years less by reason of such poverty and squalor, a large part of their sickness must be relieved by public charity and one-third of those who die among them must be buried at public expense.

The problem of how to improve the sanitary condition of these quarters to prevent the increase of foul, damp, dark and overcrowded dwellings and thus lessen the burden of the community, without still further pauperizing the people and attracting to the place other vagrants and criminals, is one of the most serious that confronts modern civilization and municipal government.

It is easy to prove to any intelligent business man that high death and sickness rates in a city imply heavy demands on the public purse in the maintenance of hospitals and other charities, and also to show that an abundant and pure water supply, clean streets, good sewerage and good and well enforced building regulations are among the best means of lowering these death and sickness rates.

WRONG METHODS.

The foregoing quotation suggests a conviction which has long been forced upon my mind, that in all our sanitary work, both in municipal sanitation and in quarantine, we are working at the wrong end of the line. We are treating symptoms instead of the original cause of the disease, and both for sociologic and economic considerations it would be far better to change the point of our attack.

Let me illustrate by the quarantine methods heretofore in vogue, those now and in the future to be utilized in the suppression of an epidemic disease such as yellow fever. When yellow fever appeared in a given locality under the old dispensation, shotgun quarantines were established by near and remote localities having any possible communication therewith. The press dispatches announced that "Podunk," evidently priding itself on its vigilance, "has quarantined against the world," and other communities, not to be outdone by Podunk, followed suit. I do not mean to ridicule these measures, but how much wiser is the method now enforced of concentrating the restrictive efforts in the neighborhood of the epidemic, and how much wiser still will be those provisions of the near future which will enable any community, by reason of its good sanitary condition, to look with comparative equanimity upon the chance introduction or outbreak of a contagious disease.

And in our municipalities we build large public hospitals and establish other charitable institutions for the reception of the people whose unfortunate condition is attributable in a large measure to the insanitary conditions which our municipal governments allow to persist. As an economic measure, therefore, as shown by Dr. Billings, it will in the long run be profitable to spend more upon sanitation; and from a sociologic standpoint the advantages of this policy will be no less marked, for it must have occurred to most of my hearers in their hospital experiences that the greater the number of charity hospitals that are founded the greater will be the number of people who are willing to become the recipients of charity; and that while charity is to be commended the zeal manifested therefor may, after all, bring unfortunate results, for "zeal without judgment is a fault, even though it be zeal unto good."

SANITATION VERSUS QUARANTINE.

Another strong appeal for sanitation lies in the promise which it would give of getting rid of quarantine. The time is at hand when we must consider the necessity of ridding ourselves of these restraints upon commerce, of holding a ship with its valuable cargo and eager passengers, in quarantine because some person is aboard who has resided in a filthy section of a foreign port and has brought with him an infectious disease. For these diseases can generally be traced to the overcrowded and otherwise insanitary sections of a city, the sections which, as I have before stated, should receive our first consideration. And the rich man held on board a steamer in the upper cabin because of infection aboard his ship in the steerage may reflect that his detention is due primarily to the faulty sanitation of some miserable portion of some foreign city, and he receives thereby a demonstration of his personal interest in these conditions.

It is an interesting matter for conjecture—what would be the effect upon the prevalence of contagious disease if there could be a complete wiping out of all slums and low tenement-house districts in all our cities. It matters not that an epidemic once started may prevail as violently, or more violently, in the better portions of a city, and that cleanliness and sanitation may then have but little effect upon its progress. The fact remains that for the perpetuation of these diseases among the people filth and bad environments are essential, and when we reflect how easy and natural is the upward gradation of infection, how readily through successive grades it may ascend the social scale from the lowest to the highest, the direct and personal interest of the wealthy and more intelligent classes of a community in the condition of the poor and ignorant becomes manifest. The greater danger of contagious disease among the poor is recognized in the present U. S. Treasury quarantine regulations, providing for the inspection of vessels at foreign ports bound for the United States. These regulations require, under certain circumstances, the inspection of the steerage but not of the cabin passengers. We have made a class distinction, notwithstanding our democratic ideas, but the regulation is based on knowledge. It is a recognition of the fact that

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contagious and loathsome diseases are more apt to be prevalent among the poor, not simply because they are poor but because they have been crowded and prevented from living under as good sanitary conditions as the more favored classes.

That good sanitary environment, enhancing the general health, is the best means of eliminating contagious disease, is illustrated by a conversation which I have had within a week with the director of the Hygienic Laboratory of the U. S. Marine-Hospital Service, Dr. Rosenau, who has just returned, after a prolonged period of study and investigation in the Pasteur Institute in Paris. On inquiring as to the latest phases of scientific investigation and the trend of thought at this great intellectual center, among other matters, he stated that there seems to have arrived a period of pause in bacteriology, or at least a spirit of inquiry as to the true relation of microbes to the diseases of which they have been considered the special agents. Dr. Rosenau's statement is as follows:

VIEWS ON ORIGIN OF CONTAGION.

We have lately been compelled to modify some of our notions of the causes of contagious and infectious diseases. After the brilliant discoveries by Pasteur and Koch it was thought that the presence of the pathogenic microbe organism was like the bite of a venomous snake, surely poisonous. But now we know that there are other conditions besides the presence of the microbe necessary to produce disease. Many people go about with virulent diplococci of pneumonia in their respiratory tract but do not have pneumonia. Why? Because their cells are vigorous enough to prevent the diplococci invading the lungs, but put such a person under bad sanitary conditions or depress his vitality and the microbes are not phagocyted—they invade the lungs and pneumonia and death follow.

The same, to a limited degree, occurs with the bacillus diphtheriæ.

In times of cholera epidemics men go about with living, virulent, cholera vibrio in their intestinal canal, yet they are not sick. Why? Because the conditions for the production of the cholera toxins are not favorable—there is no abnormal flora in their intestinal canal. But let such a person eat poor and tainted food or derange his digestion through indiscretion or evil sanitary surroundings and the disease results.

Many people live a long and active life with tubercle bacilli encysted in the apex of one lung. As long as they have plenty of fresh air and sunshine and good sanitary surroundings they remain well. But give such a person poor food or bad sanitary surroundings and see what happens. The battle going on between the bacilli and the cells results in a victory for the bacilli. The cells die and the victorious bacilli spread havoc through the lungs. We, therefore, have a scientific proof of the sense of the old-time notions of the old-fashioned doctors who taught the value of fresh air and sunshine, of good food and exercise, of cleanliness and dry dwellings, and we find that the conditions of health which result from such good sanitary conditions are after all among the very best preventives against infection.

Another good effect of sanitary excellence would be to obviate municipal deception either in the concealment of the existence of contagious disease or by reports giving a sense of false security to other communities. This subject is one which time will not permit me to discuss, but was treated of at some length in an address which I had the honor of delivering before the Social Science Association, in Washington, D. C., last May. I will simply say that the greater the neglect of sanitation, the more pronounced the disease-bearing factors of a city, the more sensitive does it seem to the acknowledgment of the presence of contagion, the more determined does it become in outright denial. It is thus seen, and it is by no means a matter of imagination, that municipal morality is affected by the municipal sanitary status.

WHO SHOULD BE SANITARIANS.

In the sanitary progress of the new century, it has occurred to me, there must be developed new classes of individuals in sanitary affairs. To-day every physician is considered, in a sense, a sanitarian; then there are the professional sanitarians, represented chiefly by those holding sanitary office; but there are very few men to-day engaged in legislation who give any thought to sanitary legislation. We need a classs of men who are versed in the law, who are skilled in framing laws, and who are familiar with the difficulties and methods of securing their enactment. The average doctor or sanitarian is as a child in these matters. Impressed with the importance and nobility of his cause he becomes oblivious to the sentiments or even the rights of those affected unfavorably thereby. The same influences which seem to make of the doctor a poor man of business seem to make of the average sanitarian a poor man for legislation. So that it seems to me, at least in the United States, it will be necessary in the development of the ideal sanitary legislator to look for him among the lawyers rather than among the physicians. There is no reason why a good lawyer should not become an adept in sanitation. I believe it to be more difficult for a good doctor to acquire legislative wisdom.

Another class of men whom we should look to for aid are the men of extreme wealth. I believe their attention should be directed to the vast amount of good to be done by the employment of their capital in backing up sanitary improvements. The number of great fortunes possessed by individuals in our several republics, I have not had the opportunity of learning, but they are numerous; and so far as I can judge, their possessors, at least a large number of them, are imbued with generosity and a desire to utilize their great wealth for the public good. Witness the large number of universities founded by wealthy men, the public libraries, and other institutions, erected or endowed by them; the contributions which they make in times of great calamity and in ordinary times to all charitable undertakings.

The methods by which they may assist in public sanitation may not be so obvious or numerous as other methods of advancing the public welfare, yet the influence of a man of great wealth could be distinctly felt in the advancement of sanitary legislation, and in the perfection of sanitary administration. Moreover, the use of large capital in the improvement of the dwellings of the poor appears to me to be as sensible and noble a method of the employment of capital as can be found. It has been a matter of surprise to me that the attention of our wealthy men of philanthropic impulses has not been more frequently thus directed. The Mills Buildings in New York City in a measure illustrate this idea, and I doubt not that a proper inquiry into the subject would develop other illustrations. But the advantage which individual capital enjoys over municipal government in the improvement of the dwellings of the poor lies in the difficulty experienced by the latter in condemning and destroying unsuitable tenements. Capital can purchase them and erect good buildings in their stead. This is illustrated by the history of a company formed, and now being successfully operated in Washington, D. C., for the erection of suitable habitations for the poor, with less thought of profit than of public benefaction. As originally outlined, the scheme included a condemnation by the commissioners of the District of Columbia and a destruction of the condemned

insanitary buildings and the erection in their place of buildings by the company, though owing to legal difficulties the necessary legislation for destruction has not yet been enacted.

In a recent press clipping I have read that statistics just compiled show that during the year just past contributions to educational, religious and charitable objects and institutions in the United States have amounted to almost $61,000,000, donations of less than $1000 not being included in this summary. The article further states that this showing seems to indicate that there is a growing disposition to make philanthropy a partner of prosperity, a tendency to give helpfully instead of pauperizing men by benefactions. But in the list of these benefactions I see no mention of purely sanitary gifts or endowments, and to my mind it seems a reasonable proposition that more practical and beneficial results would have been obtained if this $61,000,000, instead of being expended upon educational, religious and charitable institutions had been expended upon reclaiming the slums, and in the purchase and destruction of rookeries, with the erection in their stead of modern sanitary tenement-houses, and that, too, even though the money had not been expended outright as a gift, but as a safe though moderately paying investment.

SANITARY TENEMENTS.

The need of sanitary tenements has been brought to the front by the recent agitation and widespread movement for the suppression of tuberculosis. In a pamphlet on the tenements and tuberculosis, by Dr. S. A. Knopf, of New York City, appears the following statement: "The present condition of the tenement houses in this city is so serious that the evils arising therefrom are a distinct menace to the welfare of the community. There are at present over 44,000 tenement houses in the old City of New York, and new tenement houses are being erected at the rate of about 2000 a year. These are, in many respects, worse than the old buildings erected thirty years ago. They are badly constructed, and so planned that many rooms depend for their light and air upon long, narrow, dark, air-shafts, which, instead of giving light and air, are merely stagnant wells emitting foul odors and diseases."

It is true that restrictive legislation may be enacted, but in view of all the foregoing facts can there be found a more useful method of employing great individual wealth than in the removal and the prevention of the erection of such houses by the substitution of those properly constructed.

In a recently published article by Charles R. Henderson, Professor of Sociology in the University of Chicago, on the spirit of modern philanthropy, the writer states that "philanthropy has taken a wider and nobler view of its mission. It has become preventive and educational." He quotes Miss Carpenter, as follows: "A hospital can not cleanse a poison-infected district, nor diminish the constant supply of patients from an undrained and malarious locality." He further says: "It is well to remove the weak and tempted from bad environment, better still to improve the environment. It is well to go down to the folk-swamp and rescue one here and there; better still to drain the cesspool, improve the tenements, prevent adulteration of food and drink, inspect factories and compel use of devices for averting accident and disease. The wall at the top of the dangerous precipice is worth far more than an ambulance at the bottom.

Since the above lines were written I have read a letter from a special correspondent (Marshal Lord) of the Washington *Evening Star*, of January 19, showing the reformatory work of this character now going on in London, which should certainly stimulate all American municipalities to efforts in the same direction. The writer states that:

> Every American city big enough to have one of those municipal sores called a slum will doubtless be interested in the huge experiment London is undertaking. This is nothing less than the expenditure of ten millions of dollars in the wiping out and rebuilding the homes of about forty thousand people. A further program that means the expenditure of another ten millions is now being discussed, and, after these projects are well under way, new schemes will be planned to the same end and more millions spent until the necessity for spending money in this way in London shall have disappeared and the city have become a landlord on an unprecedented scale. To-day the housing problem is the worst that London has to face, but her powerful county council, which has done several rather remarkable things already, and which has practically unlimited wealth to draw upon, has determined that overcrowded, insanitary, and slum areas must go. The County Council has already attacked, razed and rebuilt one of the worst slums in London. Several other notorious ones are now being torn down and still others are doomed. Medical inspectors in the County Council's employ are penetrating into the city's filthiest corners and condemning them. The wretched creatures who swarm in them are paid a small sum of money and turned out, after which the slum comes down. The "before taking" phase of the Council's heroic remedy is a mass of closely packed hovels, squalid, unlighted and unventilated, reached through grimy, winding alleys, in which the police dare to go only in force. The "after taking" is blocks of trim cottages or apartment buildings, each separated from the other, equipped with literally every modern convenience, including a perfect system of drainage and every essential for cooking. The apartments are well lighted by day with large windows; at night either by gas or electricity on the slot system where a penny dropped in produces gas for six hours. These model dwellings, moreover, are to rent at prices which even very poor people can afford to pay and are immediately tenanted to their full extent.
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> So far, on workingmen's homes of this pattern that occupy the place of former slum districts, the London County Council has spent a little over $3,000,000. It is now building houses which will cost over $1,500,000, and to clear the new districts, which have been condemned and which are to be rebuilt, will cost $5,500,000 more. The houses already built accommodate more than ten thousand people. Those now building and those arranged for will give dwellings to thirty thousand more. They will be finished and occupied in five years from now.
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> The second scheme which the Council is laying out takes another way of curing the same disease of overcrowding. This is by acquiring tracts of land in the country just out of London, building model dwellings there and connecting them with the working centers of the city by light railways. This will probably cost $10,000,000 more.
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> The Council began to rehouse on a modest scale in 1883, but the importance of its work to-day lies in the dimensions to which it has grown and its great promise for the future.

It is a significant fact, happily recalled at the present time, that the new King of England, Edward VII, was identified with the inception of this work. His maiden speech in the House of Lords in 1884 was in support of a motion in favor of the better housing of the poor, and he was subsequently one of the commission appointed to consider the matter.

It is thus seen that our brethren in the East are already in the field. Why stand we here idle? Shall we in our newer territory allow ourselves to be surpassed in these matters by older governments, less democratic than our own, less dependent upon the will of the people?

In the foregoing I have endeavored to show that public sentiment, law and administration are the most

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important factors for the attainment of our standard of sanitation.

ADMINISTRATION.

One more word with regard to administration. The health officers selected under state or municipal law are too frequently subject to political change. An experience of one term of service is generally necessary to sufficiently acquaint the health officer with the duties of his office, and while political changes in other offices may be made, possibly without injury to the public service, the same can not be said with regard to an officer of the public health. He should be selected, also, solely on account of his ability or special adaptability for the position, and while every American citizen may be expected to be a politician, in a certain sense the health officer should be one who is not devoted to politics. And here is where the great body of the medical profession can exercise a salutary influence by taking an active interest in these appointments, insisting that men of character, of education and reputation, should receive them, for it is the duty of the profession to uphold the health officer in the performance of his public obligations. The health officer and the boards of health should command the respect and receive the support of the practitioners of medicine whose influence in this direction is all powerful.

SANITATION AND POLITICS.

One word at this point with regard to sanitation and politics. The city of Washington is sometimes referred to as typifying the highest order of sanitary equipment and administration, and when it has completed its sewerage system and established its water filtration plant it will be a model city. But, it may be argued, it is a model city because, unlike others, it has no local politics. This is true, but if municipal politics seem to interfere, as they often do, with sanitary progress, it but serves to demonstrate a reason, in addition to many other reasons, why the best men should go into politics.

In the beginning of this paper I stated that municipal cleanliness and sanitation is not a field for the national government, but belongs distinctively to the states and municipalities. Doubtless there is suggested to you, as to myself frequently, the thought of the national government enforcing municipal sanitation. Speaking for the United States, under our constitution, it is impossible. Nor with our ideas of self-government is it desirable. A weak leaning upon the national government in ordinary matters affecting the people of a state or city is a thing to be avoided as lessening the feeling of municipal and personal responsibility for good government. The general government does not go into cities and say what kind of reservoirs they must have, how their sewers shall be laid and what disposal is made of their garbage. These are left to local governments, which are just as capable for these measures as they are for managing their own police and fire departments.

Yet in the exercise by the general government of its right to prevent the introduction of contagious diseases from foreign countries, or the spread of these from one state to another, I can foresee the possibility of such national action as may, without objection, have an influence on the sanitation of cities. The sanitation of seaport cities which habitually breed yellow fever, with a view to eliminating this disease, which interferes so seriously with commerce, is being seriously considered by thoughtful men interested in commerce, sanitation and diplomacy.

COMMERCIAL INTEREST IN SANITATION.

There is no one disease which interferes so seriously with commerce in the western hemisphere or causes greater panic than yellow fever. The interdependence among nations in the efforts to get rid of this disease has become strikingly obvious, and illustrates the unity of interests of the nations in sanitation.

Sanitation in Western Republics.—An inquiry into the sanitary conditions in the ports of the western republics will show, with regard to many of them, a woful sanitary condition, a neglect of the first principles of sanitation, and either faulty or entire absence of quarantine protection of one city from another. The commercial relations between these places are each year becoming more intimate, and through correspondence and conversation with representatives of the Central and South American republics, I learn that the same apprehension which is felt by the United States each summer is experienced by all. All, or nearly all, of our republics have suffered in their commercial and business prosperity through the visitation or threatened visitation of yellow fever, and I have been surprised by the instant approbation with which all with whom I have spoken received the idea of an international agreement looking to the sanitation of such seaports as are habitually infected with yellow fever. That yellow fever can be rooted out of an old endemic focus, I believe; but to demonstrate it is not an easy matter. I have endeavored within the past two years, through special reports from the United States consuls, to collect facts showing the relation between sanitary improvements and the prevalence of yellow fever in the principal fever ports of the tropics, but the results are as yet undeterminate. I believe, however, we have one notable illustration of success in Santiago, long known as a yellow fever port, but where the measures adopted by General Wood and the medical officers of the army were so radical and thorough that no yellow fever now prevails or has prevailed during the past year in that city. I feel confident, too, that in due course of time, and that before long, yellow fever will be made to disappear altogether from Havana. Reasoning somewhat by analogy, we should be able to exterminate yellow fever from a given locality. A year ago last July it appeared in the National Soldiers' Home, Hampton, Va., where there were 3500 veterans of the Civil War, but it was stopped, and that, too, quickly, with a record of forty-five cases and thirteen deaths. In June, 1896, it appeared at McHenry, Miss., and in twenty days was entirely suppressed, after the occurrence of twenty cases in all.

PROVISIONS IN ELIMINATING YELLOW FEVER.

In eliminating it, however, from a city or locality where it has prevailed for many years, there are four provisions which must be complied with: 1. Effective sanitary administration. 2. Good sewerage and water-supply, soil drainage and paving. 3. Sanitary engineering of harbors. 4. The destruction or scientific disinfection of houses where the fever has prevailed. In Havana the first of these requisites has been and is being accomplished. The city is clean on the surface. The sanitary administration is excellent, and measures are already under way for securing the second requisite of good sewerage, drainage and paving. I do not know that it has yet been determined whether sanitary engineering is necessary with regard to Havana harbor. But any harbor in the tropics which receives sewage, and is so land-locked that it becomes a cul-de-sac, must be subjected to such engineering as will cause a flow of its waters freely to the sea. But even when all this is done, yellow fever will

soil prevail unless the fourth measure is enforced, namely, the destruction of old infected houses and the thorough scientific disinfection of others too good to be destroyed. In a tropical city a few years ago, much stress was laid on the good results following sanitary improvements of the harbor, but their improvements went still further, namely, to tearing down a large number of old houses, which was immediately followed by an unusual outbreak of yellow fever. In other cities, I have been informed, millions of dollars have been spent in improving the sanitary conditions, yet yellow fever prevails from time to time, and why? Because the houses are infected, and have been for a great number of years.

MEANS OF DISINFECTION.

This brings to us the question: Have we a simple and efficient means for a scientific disinfection on this broad scale? I believe that we have. To the U. S. Marine-Hospital Service, which has had so large an experience in the post-epidemic disinfection of cities and towns, the thought of a simple, clean, non-injurious, inexpensive, yet thorough disinfection of houses, after its experience with the carting around of steam chambers, the burning of sulphur, and washing down with bichlorid solution and carbolic acid, and meeting the bills afterward presented for ruin or damage of property—the thought comes as a welcome relief.

A few years ago, through the inventive genius of one of our officers, we believed we had a formaldehyde lamp which met every requirement, but experience demonstrated certain defects which caused its temporary abandonment. The intelligent mechanic who constructed the lamp, however, has so improved it that thus far it has stood every scientific and practical test to which it has been put, and I hope and believe that in this lamp we have an efficient, simple and safe method of evolving formaldehyde gas of a strength to insure a thorough disinfection of houses and public buildings. I mention this matter as one of encouragement in the idea of eliminating yellow fever under the terms of the fourth requisite mentioned, from cities usually infected.

INTERNATIONAL AGREEMENT IN SANITATION.

The plan of international agreement which was outlined in an article by myself,[1] contemplates a convention to be composed of public sanitarians, civil engineers and financiers, whose duty it should be to prepare a treaty providing for the examination of the chief yellow fever ports by a commission representing the republics concerned. Each country should obligate itself to put into effect the measures recommended by this commission, or measures of its own which should meet with the commission's approval. Since obligations without penalties would be worthless, the treaty should provide that if after a sufficient time these improvements are not made, each of the other nations interested should impose such discriminative tariff or tonnage tax or quarantine restraint upon the offending nation as would cause it in its own interests to comply with the terms of the treaty. Since the publication of the *Forum* article, I have conversed upon the subject with a number of the representatives of the Central and South American republics, and with representative public men of our own country, and without exception all have pronounced the idea both valuable and practical.[2] If this measure should become an accomplished fact, think of the stimulation which, through international influence, would be given to municipal sanitation everywhere. Dr. Kober, in his excellent address on the "Progress and Achievements of Hygiene," gives in detail the beneficial results of the sanitation of European cities. In providing for sanitation of seaports on account of yellow fever, the cities would undoubtedly benefit with regard to other diseases, and there is no doubt that as a result their commercial prosperity would be so enhanced that other cities would take notice and profit by their example.

Standing on the threshold of the twentieth century, and looking forward to its achievements, the foregoing thoughts appear to lose the elements of doubt which may at first seem to attach to them, particularly when we look back upon the achievements of the past century in medicine, in surgery and in sanitary science. And when we study the achievements of other centuries of the past, and see how they have been filled with the more primitive struggles for individual and national freedom; with the evolution of physical and mental science; with the development of architecture, painting, sculpture, and literature, it would seem that the next great cause pressing for agitation, both for the amelioration of unhappy conditions and for further advancement along the lines of previous study and development, is the cause of sanitation. It is the next step for progress in the destinies of man for "elevation in the scale of being." For further intellectual and moral advancement sanitation is indispensable. Progress in other matters will in a measure depend upon it. The movement has already begun. Witness the sanitary benefactions of George Peabody in London, thirty-eight years ago, and the efforts of the London County Council, as previously narrated, and similar work in Liverpool, Glasgow, Paris, and Brussels; the valuable report of the New York Tenement House Commission of 1894, and the labors of the present commission; the report of Surgeon-General John M. Woodworth, U. S. M.-H. S., to the International Medical Congress in 1876; the resolutions of the Conference of Sanitary Officers, at Montgomery, Ala., in 1899, and of the American Public Health Association in 1896; the report of the U. S. Department of Labor upon the investigation of slums, under the authority of act of Congress; and the innumerable contributions on these subjects to the daily and medical press. All the above relate to the subjects which have just been under discussion, and the time has come for more positive action.

The twentieth century will certainly demonstrate the brotherhood of man; the fraternity of nations; and, not excepting even the Peace Conference at the Hague, there can be no more hopeful sign of promise than is held out by sanitation.

Here is a common field upon which the nations may meet with unselfish and common purpose; here is a policy which may well be put in the platforms of political parties, and which, by requiring intelligent legislation, will bring the best men into local politics; a policy which will put a rifle-groove in the shotgun now loaded with spasmodic municipal reforms, good government clubs, and crusades against vice, and weld these latter into one missile of definite direction and force. Here is a means by which the rich may help the poor without further pauperizing them; a cause, which, if advocated will break down unnecessary class distinction; a promise of greater public morality; an assurance of higher life and greater health and prosperity to all, embodying in it the *summum bonum* of human existence, "the greatest good to the greatest number."

1 The Forum, February, 1899. 2 A resolution embodying the plan as outlined above was adopted by the Pan-Amer. Med. Congress on motion of Dr. Eduardo Wilde, Argentine Minister to the United States and Delegate to the Congress.

V.36 1901

RESULTS OF SURGERY IN THE AGED.*

JAMES P. TUTTLE, M.D.
NEW YORK CITY.

In the study of human longevity, it is not only a question of teaching young people how to grow old, but also old people to grow older. Old age with impaired faculties and physical infirmities is hardly a blessing to individuals or their friends. Many of the ailments to which old people are subject, which worry and distress them, tend to shorten life, are amenable to surgical treatment, and would be unhesitatingly so treated in young people, but which are left alone in them on account of the fear of operations and anesthesia on the aged.

The scriptural axiom, "three-score years and ten" as a reasonable limit to human life, has become so firmly imbedded in the layman's mind that those whose friends have approached this age generally feel that it is better for them to suffer what ills may have come to them, rather than take any chances in procuring aid from surgery. They hold that only a few years at best are left, and prefer to accept them, even with pain and worry, to taking the slightest risk of meeting death from surgical procedure. They are entitled to their judgment, but they should be guided by the accurate knowledge and experience of surgeons as to the exact risk they take. Many lives are lost or shortened by the excessive fear, both in the laity and the profession, of surgical procedure in the aged.

Certainly, a large number of painful affections, such as hemorrhoids, fissure, fistula, hernia, stricture, varicose veins, etc., often carry their victims to the grave, on account of the fear and inexperience of operators in operating on old people. All surgical procedures are hedged about with many conditions. The first, and of most importance, is the nature of the disorder. If this is fatal without operation, all other considerations must be laid aside, and the procedure which promises the best chance of prolonging life undertaken. If, however, the operation is one of election, and not of necessity, we must consider many things, e. g., the physical conditions, heart, lungs, brains, kidneys, etc.; then environment, for a suitable time and place is necessary for perfect results in surgery. Mental repose and absence of nervous tension are important adjuvants in the recuperative process. Sex and age are also to be considered. This last is frequently made the first in the consideration of a surgical operation. Many friends and surgeons leave old people to their fate, with the simple assertion: "Oh, he is too old for operation."

I do not propose to go into any elaborate statistics to discuss with you the influence of surgical operations on the aged, but my opportunities as visiting surgeon to the public institutions of my city, for the study of this subject, have been so unusual that I feel justified in letting these facts have a wider circulation than that of a purely clinical lecture. I shall quote no books nor authorities, but simply state facts which I have observed and the records gathered from hospital charts by persons entirely disinterested in proving any preconceived theories. The facts presented will embrace a brief statement of conditions determining surgical interference, and a tabulated statement of my past sixteen months' work.[1]

* Presented to the Section on Surgery and Anatomy, at the Fifty-first Annual Meeting of the American Medical Association, held at Atlantic City, N. J., June 5-8, 1900.

1. This paper was written eighteen months ago, the cases here referred to all occurring in the years 1898-99. Since September, 1899, the number has been materially increased—the only death occurring in case of amputation of leg for sepsis due to senile gangrene.

CONDITIONS DETERMINING OPERATION.

The old adage, "a man is as old as he feels and a woman as old as she looks," is one of the safest guides in surgery. I have found that sprightly, energetic, ambitious old men stand surgical procedures well, while wrinkled, dull-complexioned, weazened-faced, dried-up old women of lesser years succumb quite easily. On the other hand, well-preserved, healthy old women, with bright minds and clear complexions, are capital subjects for operation. In one such, 84 years of age, I operated at one sitting for double inguinal hernia nearly four years ago, with perfect success, and she is to-day one of the cheeriest, most grateful and happy patients I have.

The condition of the heart in determining on surgical operations is not nearly so important as the laity believe. Organic valvular diseases of the heart, unless of the most marked character, are not a bar to ordinary surgical procedures; fatty heart, and degeneration of the muscles, however, should be distinctly ruled out. As we will see later on, the condition of the kidneys is important, but the appearance of a slight quantity of albumin or an occasional hyaline cast in old people is not of any great moment, and these cases can generally be operated on with confidence.

In summing up these cases, I have made the arbitrary division of 50 years—above and below. Of those over 50 years old, I hold records of 130 cases, of which the average age is 65.8 years. If you take those above 60, there are 79 cases, whose average age is 69.8 years. Of those below 50, I have only completed the records of 78 cases, with an average age of 34.7 years. Many more have been done in this class, but I have not yet been able to complete the records.

The mortality class above 60 was 3 in the 131 cases. Two of these deaths were caused by pneumonia, due to the neglect of the orderly in one case and the unfortunate breaking down of the boiler and consequent exposure to great cold in the other. Several other cases of pneumonia occurred in the same ward from the same exposure, in people who had not been operated on. The third died from edema of the lungs, following operation, and on postmortem, showed chronic Bright's disease Two of these deaths were caused by pneumonia, due to the operation, which should not have been done. It was a mistake, due to the fact that the party whose duty it was to examine the urine did so carelessly or not at all, and made a report which was absolutely out of keeping with the patient's actual condition. The pneumonia cases can hardly be charged to the operations, as they were clearly due to causes beyond the operator's control.

The number of deaths in patients under 50 years of age was 3, making an average of nearly 4 per cent, considerably larger than that in the older class. One of the deaths in this class was due to the same cause, brought about by the same exposure as in the two cases described above.

The character of most of the operations done can not be said to be of the greatest danger, but the large majority would be placed in the class of major operations. I shall enumerate only those above 50 years of age, as we propose to study the influence of surgery on the aged. They are as follows: hemorrhoids, clamp and cautery, 26 cases; modified Whitehead, 8; inguinal hernia, 30 cases, ventral 1, femoral 1, umbilical 2; varicose veins, radical operation, 26; skin grafting, 1; tenotomy, 2; stricture of rectum, 2; resection of bowel, 2; fistula in ano, 9; prolapse of rectum, 2; prolapse of uterus, 2; hysterectomy for cancer, 1; hydrocele, 3; Tumors, removed, benign, 1; stricture of urethra, 3; resection of

urethra, 1; ischio-rectal abscess, 2; perineal section, 2; circumcision, 1; varicocele, 1; Bottini operation for enlarged prostate, 6; appendicitis, 2; total, 131. Anesthesias: ether, 83; chloroform, 13; cocain, 30; total, 126.

Old people generally fear the anesthesia more than the operation, and it is interesting to observe that of the 217 cases recorded no patient has died or suffered materially from ether, chloroform or cocain. Ether was used 83 times, chloroform 13 and cocain 30 times in the elderly class.

To any one who has ever visited our almshouse and workhouse, it will be unnecessary to say that these cases were not particularly favorable ones for operation. They were not of the robust, well-nourished class, but rather the opposite. Neither were they carefully selected from such material as existed there. Our young house surgeons, in their enthusiasm to gain experience, have persuaded almost every one they found with surgical deformities or diseases to come into the hospital and undergo operation, and I must confess that I have rather tempted Providence sometimes, in operating on the cases presented, simply to encourage the staff in hunting up material, and because the patient wanted the operation. There were 30 cocain operations, 25 of them for varicose veins, from which all recovered with cure or great relief, and without suppuration; 1 clamp and cautery operation for hemorrhoids, 3 for small tumors, and 1 tenotomy, all of which made good recovery. There were 30 inguinal, 2 umbilical, 1 ventral and 3 femoral hernias, making 34 cases, in all of which the peritoneal cavity was invaded. Among these were only 2 cases in which there was a particle of pus. One of these two tore his bandages off during the first night after operation, thus causing an invasion of the superficial wound, which happily amounted to nothing, and the patient made a good recovery. In the other, done by my house surgeon, the bladder was cut, and the urine allowed to escape into the wound, which became infected. The patient recovered in due time, but, as was to be expected, the hernia returned, which, by the way, is the only case of recurrence in five years' experience with the modified operation for this deformity.

The 3 deaths in the elderly class were, unfortunately, all under this hernia class; only 1, however, should be charged to the operation. There were 35 operations for hemorrhoids, 26 by the clamp and cautery method, and 8 by the modified Whitehead operation. All of these recovered without incontinence or prolapse or other inconvenience. In the 9 operations for rectal fistula, there were 8 cures and 1 patient left before we could say what the result was. These cases were all stubborn and slow to heal. The remaining may be read from the list above. I will only call attention to the 2 cases of appendicitis, in both of which the appendix was removed, with the most gratifying results, and the 2 of resection of the intestines, both of these patients being about 70 years of age, and in one I removed over 21 inches of the small intestine, with the most perfect success. All of these were done under general anesthesia, chiefly ether, and the patients made good recoveries.

The mortality, as will be seen, is less than 3 per cent.; 1 per cent., in fact, if we exclude the unavoidable deaths from pneumonia. Albumin in the urine in small quantities has not been taken as a contraindication to operation, but those with fatty or epithelial casts have been rejected. Hyaline casts are not so serious, as they frequently occur in old people without any particular significance. Fatty, flabby old people have not been considered fit subjects for operation, but several have been done with good results. Operations requiring healing by granulations or long suppurative processes have not been considered satisfactory.

Time has always been considered an essential element of success, and the utmost celerity consistent with good work has been practiced. I do not believe that it is a matter of indifference whether the patient is kept under ether twenty minutes or an hour. Every minute that can be saved without prejudice to the operation is just so much gained, and lessens by just so much the danger of shock.

Whether this experience is better or worse than that of others in the same line of work I am not able to say, but certainly it does not sustain the general fear of operations in the aged. I have studied to find, if possible, some reason for the low mortality among these paupers, criminals and vagrants, but without any very definite conclusions. I have thought that perhaps age and hardship have inured them to privation and rendered them insusceptible to shock in a degree that we would not find in the higher walks of life. Certainly shock, which is so much dreaded by the general surgeons, has been almost absent in the large number on whom we have operated. But perhaps the more rational view to take of this is that when an individual has reached the age of 60 or 70 years, in comparative good health, we must assume that he has either taken good care of himself and not undermined his constitution by dissipation and excesses, or that he originally had an exceedingly strong constitutional foundation to build on, and thus presents himself a suitable subject for operation.

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1901

DISCUSSION.

DR. R. H. DAWBARN, New York City—It has so chanced that I have had a great deal of work in this special line while acting for many years as attending surgeon to the Chapin Home for Old People, in New York City, and I have found that they bear operation much better than I should have supposed. The all-important thing is the avoidance of microbic infection as to whether we get almost as good results in old people as we do in younger patients. I have seen case after case heal aseptically and do remarkably well. On the other hand, persons having broken-down constitutions, living in public hospitals, or people advanced in age, lack the vital resistance which is necessary to oppose microbic invasion, and should this occur, you get bad results. An elderly man can not fight against a suppurative process like a young one.

DR. HART, China—I have operated many times for different diseases in old men, and very well remember one case of a man who had had a depression of the frontal bone for ten years. He had been struck by his brother in a fight at the age of 55 and came to me at 65. The depression was half an inch deep and I operated on him to remove three depressed fragments in the frontal bone. The patient made a splendid recovery and there has been no recurrence of the epileptic attacks from which he previously suffered. A number of men at the age of 75 have come to us and stood operation without any shock whatever. The middle class of Chinese stand operation well, but members of the upper do not, and this is probably due to their mode of living. Rice and meat are the principal articles of diet for the poor. Another class of cases occurring in the aged are those that suffer with epithelioma, but I find they all recover very readily without suffering from shock. Talking about old men in China, a man 75 there is practically where a man of 95 is here. A large number of the population die before 60, and a man of 70 is a rarity. I have operated on a man at the age of 90 who recovered without shock, his desire for operation being due to his wish that he could live to the age of 100, and thus get a special honor from the emperor. I told him I could not guarantee this, but the operation was performed some years ago and he is still living and looks well. I am sure the diet has a great deal to do with the patient's' ability to stand shock, and the surroundings and occupation also have their share of influence upon operations.

DR. J. P. TUTTLE, in closing, said the point brought out by Dr. Dawbarn in reference to the inability of old people to

stand suppuration is brought out in his paper, but was not read. In every suppurative case the healing was prolonged and difficult. We get just as good results in aseptic cases in old men as in young, but not in the suppurative cases.

SARCOMA OF THE INTESTINES, WITH TABLE OF FIFTEEN CASES OF RESECTION.*

C. VAN ZWALENBURG, M.D.
RIVERSIDE, CAL.

Very little has been written on sarcoma of the intestines and many errors have crept into its consideration. Conclusions have been drawn from its supposed analogy to carcinoma of the intestines which the facts do not warrant. Prominent among these errors are: the accepted opinions as to the most common locations of the tumor, the early involvement of neighboring organs and the liability to produce obstruction. Few of our text-books on surgery refer to the subject.

The "International Text-Book of Surgery" (1900) says: "It may occur in any portion of the intestine—the cecum seems to be a favorite spot and several resections of this portion have been successfully performed for sarcoma."[1]

The "American Text-book of Surgery"[2] says that as sarcoma of the intestines usually gives rise to symptoms of obstruction, and consequently comes under surgical treatment usually after extensive infiltration, it is questionable if it is prudent to attempt a radical operation as an early recurrence is almost inevitable. It suggests an intestinal anastomosis to exclude such obstruction should it occur.

Senn, in his text-book on tumors[3] (1900), as well as in his earlier "Intestinal Obstruction,"[4] puts it most frequently in the upper part of the small intestines, about the ileocecal region, the colon and the rectum. He says it usually comes to the surgeon after it has caused an obstruction. If in operating for an obstruction a sarcoma is found as its cause, an enterectomy is indicated if the tumor has not extended beyond the intestinal wall. If it has so extended he advises an artificial anus or, better still, an intestinal anastomosis.

Although a comparatively rare disease, it is much more rare in literature than in reality and deserves more attention. Of all the cases presented in the clinics during my medical course, one of the most deeply impressed on my memory was that of a young man summarily dismissed by Professor Maclean with the explanation that he had an abdominal tumor, undoubtedly sarcoma; that it would soon prove fatal, and that nothing could be done. The pale face of that patient has remained indelibly impressed on my memory. I find that a similar impression of the possibility of the disease together with its hopeless prognosis, is very prevalent among medical men. They all speak of personal acquaintance with sarcoma of the abdomen. How many of these cases are sarcoma of the intestine?

STATISTICS OF THE DISEASE.

F. Smoler,[5] analyzing 13,036 autopsies held at Professor Chiari's pathologic-anatomic institute of the German University, at Prague, found primary sarcoma of the intestine 13 times—1 in 1000. These occurred in fifteen years, 1883-1898. It occurred 7 times in the ileum—twice including the ileocecal valve—3 times in the jejunum and ileum and twice in the cecum. In the other case it occurred in the lower ileum and was associated with an adenocarcinoma of the pylorus in a woman 70 years old. Ten were males, 3 females; 5 times the patient's age was between 30 and 40, 4 times between 20 and 30, twice between 10 and 20, and twice over 40. Probably there were few children in the 13,000 autopsies. In 7 cases there was dilatation of the diseased gut, in 4 contraction, and in 4 there was no change in the lumen.

N. Moore[6] reported 2 cases of sarcoma in 26 of new growths in the alimentary canal. Both were males, one 25, the other 40 years old; 1 involved the descending colon, the other the descending colon and the ileum.

There is a single specimen in the U. S. Army Medical Museum. It was contributed by Dr. J. N. Yarnall, Washington, D. C. It is a portion of the ileum of a male 5 years old. It involved the entire circumference of the bowel. There was some narrowing of the canal, somewhat dilated above. Dr. E. Libman, pathologist for Mt. Sinai Hospital, New York City, recently read an exhaustive paper on this subject before the New York Pathological Society, and published in the *American Journal of the Medical Sciences* for September, 1900. He reported five cases which have occurred in this institution.

R. F. Weir[7] tabulating all resections of the intestines for malignant growth up to 1886, reports two cases of sarcoma out of a total of 35.

REPORT OF CASE.

Before considering the surgery for intestinal sarcoma, I will report a case which occurred in my practice at Kalamazoo, Mich., in the fall of 1899. In criticizing the report of my case I ask that it be remembered that it was done in a small private house with only a forlorn hope of life being prolonged.

The patient was Harold S., aged 5 years. His mother's mother died at an advanced age from carcinoma of the uterus; his father's mother of carcinoma of the stomach. About June 1, 1899, the child fell from a fence and was caught between two boards and held hanging on the abdomen, head down, for some minutes. The injury was considered trifling at the time and no physician was called. About the middle of June he began to complain of abdominal pain, had repeated attacks of vomiting, his appetite left him, and he began a steady decline without any appparent cause except the general symptoms of indigestion. About the middle of July, I discovered a nodule less than one inch in diameter, in the median line midway between the umbilicus and the ensiform cartilage. It was smooth, hard, round and freely movable over a radius of four or five inches. Its growth was very marked and by September 15, it was about the size of a hen's egg. It then became fixed in the left hypochondriac region so as to produce by position an obstruction of the bowels with great pain. By careful manipulation and placing the patient upon the right side, I succeeded in moving the tumor from its fixed position and the obstruction disappeared. The diagnosis was an abdominal growth, probably omental and probably sarcomatous. A very grave prognosis was given. The tumor had all along been freely movable and an exploratory operation was advised in the hope that the growth—of whatever character—might possibly be so situated that it could be successfully removed. The operation was at first declined, but in November the parents finally decided to have it done, provided it might be performed "at home." It had been so long delayed that it was undertaken with the expectation of finding so much adhesion and involvement of important structures that removal would be out of the question. The patient was by this time very anemic, emaciated and feeble. He could scarcely walk. His temperature was 100 F. and pulse 120, soft and feeble.

Operation.—At 10:30 a.m., Nov. 18, 1899, the abdomen was opened in the median line above the umbilicus, the incision being four inches in length. The growth was lifted from its

* Presented to the Section on Surgery and Anatomy, at the Fifty-first Annual Meeting of the American Medical Association, held at Atlantic City, N. J., June 5-8, 1900.

bed in the left hypochondrium, and out of the abdomen. The principal growth was irregularly oblong, about four inches in length and three in width, and consisted of a contracted thickened mass with a partial intussusception of the ileum into the colon, drawing the healthy appendix with it. Bringing out more of the ileum, a secondary growth was exposed about two inches in diameter, which had been felt in the right iliac fossa. About three inches of fairly healthy intestine connected the two principal growths. The mesentery and mesocolon were long, allowing of easy manipulations. Several of the mesenteric glands were involved in secondary growths.

Notwithstanding the extended involvement, it was decided to remove the growth with all the mesenteric glands as the only possible hope of prolonging the boy's life. This was done by making an exsection of the ascending colon, together with six or seven inches of the ileum and all the mesenteric glands involved, making an end-to-end anastomosis with the Murphy button. The abdominal wound was closed, leaving a narrow strip of gauze running down to each side of the line of anastomosis. This was considered advisable on account of being obliged to operate in a small private house where we could not be assured of thorough asepsis.

The patient received two hypodermic injections of strychnin, 1/60 gr. each, during the operation, and immediately after its completion he was given 8 oz. of normal salt solution per rectum and the same amount in the subcutaneous tissues of the chest. He suffered much less from shock than was anticipated. About three hours after being placed in bed, the father—who was chief nurse—stepped out of the room for a moment and upon his return found him sitting up in bed. After twenty-four hours his condition was comparatively good, pulse 130, temperature normal, with no vomiting. Gas had passed the bowel. He continued to improve steadily. His highest temperature noted was 100 F., about the eighth day. His bowels moved on the fourth day. The gauze was removed from the wound on the fourth day. The serum which followed it had a slightly fecal odor. By the end of the first week a decided fistula had developed. This did not retard the recovery and closed spontaneously within four weeks of the operation. He was out of bed in three weeks and walked after five weeks. The button was passed on May 11, 1900, six months after the operation. The patient continues well and, six months after the operation, weighs 50 pounds, 17 more than before operation.

Microscopic Examination.—Drs. G. F. Inch and F. E. Allen, of the Michigan Asylum for the Insane, at Kalamazoo, made the microscopic examination of the tumor and pronounced it undoubtedly a small, round-celled sarcoma. Microscopic sections were also examined by Drs. A. C. Crofton, of Pasadena, and Stanley P. Black, of Los Angeles, with the same conclusions. The following is Dr. Allen's report:

The gross specimen, consisting of six or seven inches of small intestine above the ileocecal valve, the same amount of large intestine, the vermiform appendix and several enlarged mesenteric glands was received in Müller's fluid, from which it was removed, washed in water and placed in alcohol—80 per cent.

The large intestine had been cut lengthwise, disclosing the tumor and the latter cut across. The tumor was a firm mass about the size of a hen's egg, surrounding the ileocecal valve like a ring, the greater part lying to one side, a depression in the surface corresponding to the opening into the small intestine. This opening easily admitted the forefinger. The tumor projected into the lumen of the large intestine, was covered with the intestinal mucosa and attached by a broad base to the bowel wall. The cut surface was white and glistening and yielded, on scraping, a milky fluid. The appendix was apparently normal. In the fat of the mesentery near the junction of the large and small intestines were several mesenteric glands, some of them somewhat enlarged. Four or five inches from the ileocecal valve, on the small intestine, was a second tumor nearly as large as the other. It was not connected with the lumen of the bowel, nor did it project into it, but in close apposition to the intestine between the two layers of the mesentery. On cross-section it resembled the large tumor in structure.

On account of the size and the fact that the tumor had taken the place of the bowel wall, the large growth was evidently the primary tumor, and the growth on the small intestine a secondary in a mesenteric gland. Portions were taken from the primary tumor, the secondary and from one of the smaller mesenteric glands, fixed in alcohol, imbedded in paraffin and stained with hemotoxylin and Van Giesen's method.

Primary Tumor: Sections were taken from the periphery of the tumor. The mass of the structure was made up of small round cells with deeply staining nuclei; there was a fine delicate reticulum, composed in some parts of branching and anastomosing connective-tissue cells, and the reticulum could everywhere be seen lying between and separating the tumor cells. There were not a great many blood-vessels, but those present had very thin walls and in some cases the cells themselves formed the walls. At one side of the section was seen the mucosa with its gland ducts cut transversely and its underlying muscularis mucosa. All throughout the mucosa are seen these small cells which surround the glands, even penetrating between the columnar cells lining the ducts. The muscularis mucosa is in some places almost obliterated by the pushing in of the cells between its unstriped fibers. The submucosa has disappeared, as has also the muscle coats of the bowel, and their place is taken by the tumor structure. At one side of the section may be seen a few muscle fibers, probably those belonging to the muscular coats which are infiltrated and separated by the tumor cells.

Secondary: This section shows practically the same tumor structure, but the normal relation of the coats of the small intestines is better preserved. The intestinal wall is seen with its mucosa, submucosa and muscular coats, but the tumor cells are found between the muscle fibers and have penetrated even as far as the mucosa.

There are two modes of origin possible for the growth of the primary tumor: 1. It may have arisen in a mesenteric gland, causing its enlargement until it reached the bowel wall which it soon infiltrated and disintegrated. 2. It may have arisen from a solitary lymph follicle in the large intestine, and this latter view is the more acceptable, as it is the common mode of origin for sarcoma of the intestine.

Again, *a*, from the nature of the cell, a small round one with a nucleus staining so deeply and occupying so much of the cell that it requires careful focusing to make out the ring of protoplasm about it; *b*, from the nature of the reticulum a fine branching vascular connective-tissue stroma; *c*, from the nature of the relation of the reticulum to the cells lying always between and about them, and *d*, from the nature of the relation of the cells to the blood-vessels, forming in some cases their walls, it is evident that the tumor belongs to that class of small round-cell sarcomata known as lymphosarcoma, since it reproduces to a certain extent the normal histology of a lymph gland.

TABLE OF CASES OF RESECTION.

After a careful search in the library of the New York Academy of Medicine, I am able to present the accompanying table of cases of resection for sarcoma of the intestine.

Of the fifteen cases, 9 were males and 5 females. The youngest was 1½ years old, the oldest 52; 5 were under 10 years, 1 between 10 and 20, and 2 between 20 and 30; 1 was 30, and 5 between 40 and 50. The small intestine was alone involved 10 times; both small and large intestines twice; the cecum once; the transverse colon once. The Murphy button was used in 4 instances. Of the 15 patients, 9 recovered from the effects of the operation. The cause of death in the 6 fatal cases is put down as peritonitis twice; sepsis and pneumonia, 1 case; collapse, 1; not stated, 2 cases. Of the children under 10, only 1 succumbed to the operation. This was a boy of 8, from whom 52 cm.—21 inches—of ileum and cecum had been removed. All the other deaths occurred in

patients over 40, except possibly 1, whose age is not given. In none of these cases is it positively stated that the correct diagnosis was made before operating. Usually it is put down as obscure. Once only was it done for obstruction. Of those who survived the operation, 1 died after three weeks, another in two months, from widespread metastasis. Two were well one year after operation; 1 is well six months after. Mesenteric glands were reported involved in 4 of the patients who recovered. In addition to these I found 2 cases recorded of exploratory opening of the abdomen, in which, on account of the widespread extension of the disease, no resection was done: 1 by Professor Madelung,[8] another by Tschermakowski.[9] Death followed in a few days in both cases.

Once suspected, no time should be lost in waiting for the diagnosis to be cleared up. The time for hesitating to do an exploratory laparotomy is past, especially in the face of so fatal a disease as sarcoma. There has been so much advance in intestinal surgery of late that every patient of this kind should have the benefit of that possibility of relief. Professor Kukula[10] has recently tabulated 31 cases of resection of more than 1 meter of small intestine, and has demonstrated that there is practically no limit to the amount of intestine that can be safely removed. In one patient only two-fifths of the small intestine was left. As only 3 of these 31 patients died from collapse, there is evidently not so much shock from these operations as the first attempts at resection seemed to indicate.

RESECTION FOR SARCOMA OF INTESTINE.

No.	Operator.	Year.	Sex.	Age.	Part Removed.	Method.	Result.	Variety.	Remarks.	Where Reported.
1	Atlee, Philadelphia.	1882	F.	48	Small intestine.	Interior of tumor opened into intestine, pedical simp.	Died 2 days later.	Spindle-cell . . .	Supposed to be ovarian tumor.	W. A. Edwards, Trans Phila. Path. Soc., also Phil. Med. Times, 1884.
2	Hofmokl	1885	F.	24	Cecum, 9½ inches.	Sutures; drainage	Recovered . .	Adeno sarcoma . .	. . . . .	Gesselsch. der aertze in Wien, May 1, 1885.
3	Lange	1885	F.	. . .	Transverse colon, 6 inches.	Czerny - Lembert sutures.	Died 9th day; Perforative peritonitis.	Sarcoma	Both ovaries were sarcomatous.	R. F. Weir, Table of resections of the intestines for malignant growth, N. Y. Med. Jour. Feb. 13, 1886, p. 186.
4	Nickolaysen, Christiania.	1886	M.	28	18 cm. small intestine	Lembert suture	Recovered. . .	Myosarcoma spindle-cell.	Obstruction; mes. glands involved.	Myosarcoma intestini tenuis exstirpation with gut section, Helbridelsen Norsk. Magaz. for Lagind, R. 3, Bd. 15, S. 12.
5	Zuralski, Koenigsberg.	1889	M.	40	Small intestine.	. . . . .	Recovered . .	Small spindle-cell sarcoma.	Fourteen months after onset mes. glands involved.	Diss. Königsberg, 1889, Beitr. z. casuistic der Dünndarm Geschwuelste.
6	Von Barac?, Leanberg.	1889	M.	8	35 cm. cecum and ileum.	Czerny - Lembert suture.	Died, 24 hours.	Sarcoma	Diagnosis: kidney or colon tumor.	Arch. of klin. Chir., B. xlii. 1891, 9, 491. Ueber fünf Darmresectionen. Ein Beitr. zur Darmchirurgie.
7	Madelung, Rostock	1891	M.	52	Small intestine.	End-to-end union suture.	Died, 16 hours. Metastises numerous at autopsy.	Round-cell sarcoma.	Oper. undertaken as carcinoma; collapse after apparent excellent condition.	Ueber primäre Dündarm sarcome, M. Baltzer, Arch. f. klin. Chirurgie, 1892, xliv, p. 747.
8	Babes and Nanu, Bucharest.	1895	M.	30	Small intestine.	Lembert suture.	Recovered; well one year later.	Myosarcoma, origin in muscle layer of intestine	No dif. diag. before operation.	Berl. klin. Wochenschr., 1897, p. 138, Ein Fall von Myosarkom des Dünndarms.
9	Rovsing, Th., Copenhagen.	1896	F.	1½	Jejunum..	Murphy button.	Recovered; returned; wide involvement; died in 2 mos.	Sarcoma intes. jejuni.	. . . . .	Hospitals Tidende, no. 46, 1897, 9, 1085. Primaert Tindtarmsarkom.
10	Heinze	1897	. .	45	110 cm. small intestine	. . . . .	Recov'd; well 1 year later.	Sarcoma	M. glands involved	Zur Casuistic der primären Dünndarm Sarcoma, Diss. Greifswald, 1897.
11	Lannelogue, Bordeaux.	1897	F.	8	¾ cm.; location not named; probably sm'll intes	. . . . .	Recovered	Sarcoma	Diagnosis, tumor of ovary.	Jour. de Med. de Bordeaux, 1897, Vitrac et Lanbie Jour. de med. de Bordeaux, 1897, p. 495, Sarcoma d'intestin: enterorrhaphie circulaire: cure.
12	Siegel, Ernst, Frankfort.	1899	M.	3¾	30 cm. jejunum.	Double suture, drainage.	Recovered; died 19 days later from return.	Small round-cell sarcoma.	Aut'psy; pancreas, stomach, mesentery and kidneys sarcomatous.	Berl. klin. Wochensch. 1899, p. 767, Ueber das primäre Sarcome des Dünndarms.
13	Weir, R. F., New York City.	1900	M.	40	8 ft. 4 in. jejunum and ileum.	Lateral anastomosis; Murphy button.	Died; peritonitis.	Sarcoma	Mesentery involved.	Surgical section N. Y. Acad. of Med., May, 1900. Med. Rec.
14	Weir, R. F., New York City.	1900	M.	45	8 in. jejunum.	End-to-end; Murphy button.	Died after 11 days; sepsis and pneumonia.	Sarcoma	Diag. obscure from enormous intermittent distention of stomach and bowel above tumor stenosis.	Oral communnication to writer.
15	Van Zwalenburg, Kalamazoo, Mich.	1899	M.	5	18 in. ileum and colon.	Murphy button.	Recovered; well after six months.	Small round-cell lymphosarcoma.	Exploratory operation; m. glands removed.	. . . . .

From a study of these cases I am led to the following conclusions: Sarcoma of the intestine is more common than our text-books indicate. It much more frequently affects the small than the large intestine. The ileum seems to be its favorite location. Sarcoma rarely produces stenosis. Dilatation is more frequent. Usually it grows from one side of the bowel entirely. In my own case the symptoms of obstruction were evidently due to a change in position of the freely movable tumor. It was entirely relieved by manipulation. The diagnosis is difficult and will always remain obscure, still if a smooth freely movable tumor be found in the abdomen, unless it can be otherwise satisfactorily accounted for, we should be reminded of the probability of sarcoma of the intestine—especially if there is also present the general picture of sarcoma with its peculiar anemia.

We are learning that many of the cases of so-called collapse and death from shock are after all cases of sepsis. Sepsis following an operation is a question of technic and should not stand in the way of a good result here. The children in my table bore this operation well; only one of the five succumbed to the procedure. The way my patient went through it was a constant revelation to all who knew the circumstances.

In the present state of our knowledge of sarcoma it almost goes without saying that the only treatment for the intestinal form is resection. When an exploratory opening is made and a well-advanced sarcoma is found, exsection at great hazard is justifiable, not only on account of the absolutely bad diagnosis of the disease itself, but also because of the dangers of sepsis in the presence of tissues of such low vitality and of the dis-

semination of sarcoma foci by the exploration. The two reported cases of this kind terminated fatally in a very few days. In this connection we have a right to assume that in extirpating a sarcoma we remove a toxin center as truly as when we open an abscess.

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REST TREATMENT FOR HYSTERICAL DISEASE.*

JOHN K. MITCHELL, M.D.

PHILADELPHIA.

Indications and Technique.—Hysteria is a term which I once regarded as a vague excuse for a diagnosis, but for the last six or seven years it has been, I think, somewhat displaced from this proud position of general scapegoat by the word neurasthenia. What are the symptoms which indicate that a hysterical case is one for the rest-treatment? When we find a case in which there is great nervous instability combined with physical weakness, and usually with absence of distinct organic disease, especially if there are present some or all of the moral defects which so commonly accompany pronounced hysterical disease, then we have a symptom-complex calling for treatment by rest and isolation.

I need not dwell on the other hysterical stigmata; the list is a long and varying one, although the more essential points are well known and fairly common: backache, headache, insomnia, constant fatigue, are signs not peculiar to hysteria, but when we add to these a tender spine, tender ovaries, vague wandering pains with no discoverable substantial reason for their existence, intense interest in the varying symptoms presented, disturbances of sensibility, perhaps paralysis or contractures, above all if the symptoms are too numerous or too variable we may without hesitation call the case a hysterical one.

Certain forms of acute disease, especially uterine or periuterine, are almost the only contraindications to the treatment of such cases by rest, if we set aside the cases with distinct organic disease of the lungs or kidneys.

I may repeat what has so often been insisted on: The worse the case the more satisfactory is the treatment, as a rule. An emaciated, half-blind, anemic girl, who eats nothing and keeps herself shut in a dark room, where to a sympathetic selection of relatives she plays her hysterical comedy, sometimes to a tragic conclusion, is the kind which gives the best promise of a highly successful result.

Taking such a typical case, when, where and how shall it be treated? As to the time to begin treatment, the sooner the better is a good rule, and the only thing which would fix any special time is that immediately after the menstrual period is usually the most suitable moment for commencement. My own experience is in favor of treatment in a private house rather than in an institution. A private room in a good hospital, if the patient can have a personal nurse, will serve. As a rule such cases do not do as well if they depend on the hospital staff for nursing. One takes too many chances in the daily or hourly change of nurses and the unoccupied time for brooding is too great. In a hospital ward the matter of isolation is especially difficult to manage, and I do not like sanitaria or such institutions, chiefly for the reason that they add a new difficulty to the management of convalescents unless isolation can be thoroughly maintained to the end of the treatment. The herding together of partially recovered patients in large rooms and meeting-places usually results in the swapping of symptoms, in comparison of the virtues or vices of the respective nurses, and in consequent general dissatisfaction. A proper room in a proper place having been secured, it may be added that light, sunshine and ventilation are naturally of high importance.

Nurse.—My rule is never to use the nurse who comes with the patient from home. When in exceptional instances I find it necessary, or yield to the importunities of the patient or relations to do so, sooner or later I find cause to regret it. The same rule applies to relatives, and generally against nurses with whom the patient has a previous acquaintance. Enthusiasm controlled by educated intelligence is the first requisite. As a rule this is found in its best forms in young nurses. This matter of the choice of a nurse can not be too much insisted on; scarcely any other single element is so vital. I prefer to have a nurse who is agreeable to the patient, but this is not always necessary, and if the patient finds that she can get a change of nurses because she says she does not like the nurse, she will sometimes go on changing indefinitely in the hope that she may discover one more amenable to her ways of thinking. Still I never hesitate to change the nurse if the patient has a reasonable objection to offer, since even the best nurses do not suit every patient.

Among the strictest orders which I give the nurse are that neither the symptoms she may observe, the difficulties of management she encounters nor questions of treatment are ever to be talked over with or before the patient. She reports to the physician when he enters the room, waits a few minutes to see if he has any questions to ask, submits her daily notes, and without further words retires outside to wait for orders. This gives the patient freedom to speak about her nurse should she wish to do so, and to express, as she should freely do, her own views about herself. If the patient does not do well and no clear reason can be given for it, if the digestion is good, and yet somehow the case seems to be at a standstill, then it is best to try a new nurse. It is well to keep a judicial attitude of mind and certainly never permit oneself to fancy that all the difficulties which may arise are the patient's fault. Sometimes patient and nurse do not get on from some trifling defect of manner or method in the nurse which, if not susceptible to correction, is best met by replacing her with another nurse. The matter may be summed up by saying that all the qualities which a good nurse should have are required in their highest degree in a nurse for hysterical patients, and, in addition to these, the nurse must have certain personal accomplishments, such as being able to read aloud, which are not a necessary part of the ordinary nurse's education.

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Isolation.—Isolation I regard as the most important feature of the treatment. Once in a while, though less often than formerly, I consent to treat patients in their own homes. Even in the largest and best managed households this is usually only a way of greatly increasing the physician's annoyances and responsibilities and delaying the progress of the cure. Isolation can seldom be complete when the patient knows that only a door or a partition separates her from the members of her family. Difficulties, too, are not always from the patient's side. In fact one experiences less difficulty with the patient than with her friends and relations. Then, too, the mere fact of being in an entirely new place contributes to that change of moral atmosphere which it is so desirable to bring about, and if the change of place and surroundings is a little less comfortable for the patient, that, properly viewed, is only an added incentive to rapid recovery. The more distinctly hysterical the disease is, the more strict the isolation must be. No letters are sent or received, no visitors are seen, and but three or four persons enter the room, the nurse, the physician, the masseuse and the servant. As I have said elsewhere, there is another reason why this seclusion is useful: it enables one to gauge the amount of the emotional element in the case, to see how far emotional disturbances are due to the patient's own disposition and how far they are caused or increased by her surroundings. When these cases are treated in a hospital room, it is well to direct that the resident physician should pay but one visit a day in order, as far as possible, to limit the audience before which the comedy is performed.

As to the period during which isolation must last, this is a matter to be judged by the attainment of the desired results, not by the calendar. In ordinary cases of moderate degree six or eight weeks of absolute isolation is generally long enough and at the end of the time one may admit a single visitor, to observe the effect upon the patient, afterward gradually allowing the return to more ordinary methods of life. In the more serious cases, especially those of simulated disease or with grave hysterical symptoms, many months of isolation may be necessary and a life of careful and methodical regulation must be continued long after almost all symptoms have disappeared if the inveterate hysteric is not to relapse. Toward the end a limited number of letters are permitted and, by way of reward for good conduct, the patient may write briefly once or twice a week to some one member of her family. If so long a period of separation from home, friends, and domestic surroundings sounds like a severe measure, it should be remembered that what has to be accomplished is the breaking up radically of the habits of long invalidism.

Rest.—Rest, like isolation, is often badly borne during the early days of treatment, but the complaints which it causes, if met with patience and reasonable firmness, usually disappear within a week and the patient settles down, not merely with resignation, but often with satisfaction, to a life which may be described as one of almost complete physical immobility. At first in serious cases it is often well to have the patient fed by the nurse; in this way food will usually be taken in much larger quantities than if the patient serves herself. Ordinarily one hardly carries the prescription to this extremity, the patient feeding herself, but not sitting up further, except for emptying the bowels, etc. Thus, the use of the voluntary muscles is kept at the lowest possible point; the isolation, the absence of letters or any other cause of excitement keeps the mind inactive; the physical stillness lessens the excitability of the circulation which is usually present, and one result soon seen is an improvement in the ability to sleep.

Diet.—If indigestion, loss of appetite, or obvious gastro-intestinal feebleness is present, then milk diet makes a good starting-point. Here one often runs against an obstacle. Many patients will say that they can not take milk, and if it is given in ordinary quantities and in the ordinary way, they are very likely unable to digest it. Still it is rare to find that with care and a little ingenuity, milk can not be used. What is true of milk when used with other food is not true of milk when it is the exclusive diet. It is often necessary to begin with very small amounts. An ounce or two ounces every two or three hours, increased little by little while the other food is decreased, will generally be well borne. In a few days, with the increase of the milk, solid food may be withdrawn. Skimmed milk can nearly always be taken by patients who have indigestion from whole milk, and skimmed milk contains the most essential food values, only the fat having been removed by the process of skimming. When milk diet is not necessary the patient is ordered to begin with the usual three meals. No stress is laid on the taking of food in large quantities during the first few days; dependence is placed on the improvement of appetite, which comes with the quiet and the stimulation of desire for food by massage, as well as the increased ability to take it, which results from this form of exercise. If long continuance of milk diet is not considered necessary, after four or five days of milk alone, a chop or a piece of steak is given at midday, in addition to the milk. The next day, bread and butter or an egg is added at the second meal, and the increase is kept up by similar advances until the patient takes three full meals and from 50 to 60 ounces of milk a day. Where milk is badly borne, some other form of light and digestible food may be substituted, or broths, meat-jellies, etc., used to vary the diet.

Massage.—The profession is a little better informed about massage than formerly. Still something remains for most practitioners to learn as to the best methods and the ways of using it. It is preferable, as a rule, to have some other person than a nurse to do the rubbing, as in serious cases the nurse will have quite enough work, and the hour of massage followed by an hour of rest serves well for a period of escape for the nurse. Massage may be prescribed after the patient has had one or two days' rest in bed, beginning with light treatment not lasting over fifteen or twenty minutes and increasing in two or three days to thorough deep massage of the whole surface of the body and limbs, a process which should last for at least an hour daily in persons of ordinary size. In thin or small patients less time may serve; in the obese a longer duration of the rubbing will be necessary. A second rubbing by the nurse, not quite so thorough, with special attention to the abdomen and the spine may be given at night, some patients finding this a great help to quiet sleep. As to how the physician, who is ignorant of the methods of massage, is to know whether his patient is being properly rubbed, this practical hint may not be out of place. If after a week of massage, the patient does not take with ease the amount of food prescribed and thoroughly digest it, the massage is insufficient in quantity or bad in quality, and a change either in the plan of rubbing or in the person administering it is called for. Also, while a steady increase in weight may be expected after the first week, if the patient's weight increases too fast, the massage is either not producing sufficient tissue

waste, or the character of the food needs examination. It may be added as another practical point that the use of oil or other form of lubricant lessens very much the value of massage, as proper deep kneading can not be done when the surface is greasy and the lessening of the friction between the hand of the operator and the skin does away with one of the useful elements of the treatment. Lazy operators will, however, tell you they can not rub without oil. In that case, get another who is less afraid of work.

Electricity.—Of the original measures proposed for the combination which makes a complete rest treatment, electricity is perhaps the one which may with least disadvantage be omitted. Nevertheless I seldom omit it when the patient is on full treatment, if for no other reason than because it fills an hour or so of the day which might otherwise be unoccupied. There are only two forms which are commonly prescribed. The slowly interrupted faradic current is applied to the motor points all over the body, thus moving in turn every accessible muscle. The muscles should be contracted three or four times each and an appreciable amount of exercise as well as a very decided tonic influence is thus to be had. This will require in an ordinary-sized person half an hour, at most, if the operator knows the motor points. If the spine is tender the treatment is finished by passing a rapidly interrupted current from the nape of the neck to the soles of the feet, using a large electrode at the nape of the neck and another smaller one placed a few minutes on each foot. If constipation is troublesome, special applications may be made to the abdomen, using a rapidly interrupted current passed deeply from side to side and from the back to the anterior abdominal wall. Many patients are much afraid of the use of electricity from having been hurt by ignorant or careless methods. There is no reason why it should be painful if rightly used, and many nurses are well instructed in its ordinary applications. If the patient expresses alarm, and especially if she is of an apprehensive kind, it is best to begin the first day or two by making a dummy application, the battery working so that the patient can hear the sound, but the electrodes being used without connecting the wires to the battery. If this causes excitement or the patient complains of strange symptoms, continue the use in this fashion for two or three days, assuring the patient that she will not be hurt. If she still continues to fuss about it, after two or three days I tell them simply and plainly that they have fussed over the application of two damp sponges.

Special Difficulties.—In the course of treatment certain difficulties always arise. A bilious attack may be the not unnatural or unexpected accompaniment of the full feeding. Starvation in some degree, a laxative, or a return for a few days to a milk or skimmed milk diet, is sufficient treatment. Constipation, especially at the beginning of the course, may be annoying, but should not continue to be so if the massage is properly performed. Still in occasional cases, in spite of the most careful manipulation and electrical application, this may make trouble. Usually the ordinary aloin and strychnia pill at night and morning will suffice to overcome. For very old inveterate cases, some more radical means must be used. Hot-oil injections, special manipulations of the abdomen, electrical applications per rectum are some of the means.

Insomnia is another frequent difficulty of the first nights of treatment and occasionally persists throughout the course. The use of drugs should be avoided as far as possible, as nothing can be steadily given without some ill effects on the circulation or blood-making functions or digestion. The drip-sheet, the wet pack, and the abdominal compress are among the hydrotherapeutic measures which may assist in overcoming sleeplessness. Massage at night as well as in the day time, applied somewhat less severely, will help many patients. The application of electricity to the spine as described is found sedative by others.

As to the question of moral control and the teaching of the patient to overcome for herself the habits, modes of thought, and ways of life which digged the pit for her to fall into, I despair of even suggesting them in the time at my disposal, but it can not be too strongly insisted on that anyone who attempts the cure of hysterical patients without the largest comprehension of the moral aspects of the treatment, without intense human sympathy and the power which imagination gives to put himself in the place of the sufferer, may perhaps be able to cure the bodily conditions, but will cure them only to send his patient out to relapse at the first opportunity. The treatment should include, as a recent patient described it to me, schooling in wisdom as well as in better physical methods of life.

I am told that one difficulty experienced by physicians in the effort to apply the rest treatment is in getting patients out of bed, and at a meeting of the ASSOCIATION this criticism was made a year or two ago, but, like the moral control, it is a matter which can scarcely be described exactly to any one else. I can only recall once in a good many years having had this trouble, and then it was with a hypochondriacal patient who expressed her preference for being pushed in a wheeled chair to walking. However, walk she did and was still walking when last heard from. Great care is needed in getting patients out of bed. A person whose circulation is regulated to the requirements of recumbency by six weeks of supine position can not be expected to suddenly begin sitting up without feeling faint, weak and fatigued in a very short time. My own rule is that the patient sits up in bed for ten minutes two or three times a day to begin with, that when this has been continued for two or three days the time is increased to fifteen minutes and then she is allowed to get out of bed, of course without dressing, and sit in a comfortable chair, carefully protected from cold, for twenty minutes twice a day with a distinct order to go back to bed before the expiration of that time if she feels fatigue. For a week before getting up, the masseuse is directed, after finishing her manipulations, to give passive movements of each extremity every day; after three or four applications the patient does the movements actively. In another day or two the nurse begins to steadily increase by five minutes every period of sitting-up. It will thus require about a week before she is up for more than forty minutes, but when she is up this long without inconvenience, I allow a few steps to be taken, not more, and at the end of ten days, or thereabouts, from first getting out of bed, she goes for a short drive, but is not allowed to walk up and down stairs to reach the carriage. If she is not in a place where there is an elevator she is carried. The same care is exercised about every little advance and increase in activity.

During this time of getting up the Swedish movements, which were begun before the patient got out of her bed, are continued and increased in number and variety, special exercises being given for the defective parts of the body.

I believe that the causes of failure with these patients

lie more usually in neglect to perceive and allow for the moral conditions of the case than misunderstandings of the physical state. The after-care, the choice of the place in which the patient shall spend some weeks or months of the convalescent period, during which she should be making steady gain in nervous control as well as in physical force, must occupy the physician's attention. When it is possible, if the patient can not see the physician in person every week or fortnight, the nurse should either see him or report regularly to him in writing, and I make it my endeavor to follow such cases for a period of at least six months pretty closely, and I would pursue them even longer, but by the end of that time they are usually well enough to get tired of bothering with reports to the physician and disappear.

DISCUSSION.

DR. WILLIAM G. SPILLER, Philadelphia—So many cases of hysteria are seen in Vienna and Paris that the danger of mistaking organic disease for hysteria is possibly greater there than in America. A most interesting case of hysteria, resembling ascending neuritis, was brought to me by Dr. Rugh a year or two ago. The patient was a young girl who had run a needle through the end of one finger. She was told by her friends of results known to follow such injuries, and her arm soon became purple and swollen. The case was treated at first as one of neuritis, and some improvement occurred under this treatment, but the symptoms returned. I then saw her in consultation with Dr. Rugh and found the arm very much swollen and painful, and placed on a splint, but motion of the fingers at this time was fairly good. During the night following my examination the pain suddenly ceased, and when I saw her the next day she had no movement and no sensation in the arm. I decided that the case was probably one of hysteria, and suggested to Dr. Rugh that he should remove the splint at once and give her the proper treatment based on suggestion. He did so, and after two or three days all the symptoms had disappeared. Dr. Rugh has told me that she has had one or two similar attacks since, but that they were always cured by suggestion.

It is sometimes very difficult to make a diagnosis between hysteria and other functional diseases. Krafft-Ebing recently reported a case in which the tremor was very much like that of paralysis agitans, but because it commenced simultaneously in both upper limbs and had existed for many years without rigidity, and because the knee-jerks were not exaggerated, he regarded it as probably a case of hysteria.

Dr. C. K. Mills and I have had under observation a patient who undoubtedly had hysteria and signs also of Parkinson's disease. The position of the body was very suggestive of paralysis agitans. We think it is impossible to say at present whether this case will prove to be one of paralysis agitans or not. If it should prove to be a case of this disease I think we should make a mistake in saying that it was one of hysteria that had passed into paralysis agitans. I have now under observation a case in which I find it impossible to make a diagnosis between hysteria and Huntington's chorea.

I have seen a young woman who had fallen from one of the galleries during the burning of the Ring Theater in Vienna, and for many years following this event the symptoms that developed made a diagnosis between hysteria and disseminated sclerosis very difficult.

DR. DOUGLAS GRAHAM, Boston—I have been very much pleased in hearing such an interesting résumé of "Fat and Blood, and How to Make It." Many years ago I called attention to the fact that the indiscriminate use of oil in doing massage was an excuse for ignorance, and I am glad to find this statement confirmed by what Dr. Mitchell says.

DR. BRIGGS—I would like to ask Dr. Mitchell as to the use of oil in massage, and on what he bases the conclusion that it lessens the value of the massage. I saw one case in consultation a few years ago where there were most undoubted hysterical symptoms at the beginning of true meningitis that destroyed life in three or four days after I saw the patient.

DR. COOPER—While Dr. Mitchell's paper laid great stress on the technic of the treatment of hysteria, he did not lay as much as I would like to have heard on that particular phase of the technic which has to do with the moral treatment of the patients. There seems to be no definite way of getting hold of their moral life and placing it upon a purer and better plane.

DR. D. J. MCCARTHY, Philadelphia—As to the differential diagnosis between organic disease and hysteria, while I would not go as far as Dr. Lloyd in saying that every case of hysteria has an organic basis, still I think you can find certain cases in which there is an organic basis for the disturbance. During the past year a case came to Dr. Burr, and later the specimens were sent to me—a case which had been diagnosed as hysteria. At the autopsy nothing gross was found, but while the cerebrum was as large as the average, the pons itself was distinctly smaller. The spinal cord had developed into two distinct spinal cords, and finally joined. Evidently there was a defective development of the central nervous system, with lessened resisting and recuperative powers.

DR. A. E. STERNE, Indianapolis, Ind.—There are certain conditions of an organic character that offer a greater opportunity for confusion than do tumors of the brain. It seems to me that among these syphilis ought to take a more prominent rôle than has been given. The mutability of symptoms in hysteria is seconded very closely by the mutability of symptoms in syphilis. This is also true in regard to the change of the color fields. Another point that ought not to be lost sight of is that hysteria in males is a very different thing from hysteria in females, so far as its manifestations are concerned. The symptoms are very much more stable in males than in females, so far as my own experience goes.

In a case at the hospital, not long since, one which I was preserving for a specially good clinic, a large negro, six feet two or three inches tall, who had been a cement worker, carrying hods and barrels, had suddenly lost the use of the entire arm and leg on one side. We had the characteristic hypothenar symptom of syringomyelia, and he had some of the other characteristics, so that I left the diagnosis open. A few days later, in the clinic room, on examination I found that not a single symptom of that which had been present was there, and I was holding a clinic on a perfectly well man. I have since been in doubt whether I had a case of hematomyelia or hysteria. I believe it was a case of hemorrhage in the spinal cord and not hysteria. Most of these patients are constipated before they take the rest cure. A very large percentage of the hysteria is due to the long-standing constipation. It is not the diet particularly which causes the constipation. I never give milk with anything solid; I believe that milk is not to be digested, but simply to be absorbed.

DR. G. W. DRAKE, Hollins, Va.—All hysteria has an organic basis. If people imagine they are sick, they are; there is an abnormal condition in some part of the nervous system. In listening carefully to the discussion of treatment it was evident to me that, while some of the gentlemen have tried very hard to make the differential diagnosis between organic diseases and hysteria, yet their treatment of hysteria is along the line of the treatment of organic disease. They are careful about the diet, and they give massage, and all their treatment is material. Because a lesion can not be seen with the microscope is no proof that it does not exist. Every ache or pain has a material pathology, and every abnormal action or disordered function is the consequence of a material disorder.

DR. D. I. WOLFSTEIN—I would be very much obliged if Dr. Mills or Dr. Mitchell, in closing, would try to draw the line a little more closely as to those cases which are not proper cases for the rest cure.

DR. CHARLES H. HUGHES, St. Louis, Mo.—I should couple with the rest the diversion cure and the change of environment cure. There are patients to whom in my experience the rest cure has proved the most restless kind of cure. So while I regard the rest cure for a certain class of overstrained society people, the class who largely came under the elder Mitchell's hands, and with whom he had the best results, as an excellent thing, there are patients to whom it is not applicable.

DR. CHARLES K. MILLS, Philadelphia—One matter to which attention was called is very important, viz., the diagnosis of hysteria from syphilis of the nervous system. Because the tracts of the nervous system are not found properly developed in a certain case, or a certain portion of the nervous system is relatively undeveloped in another case, apparently normal during life, except for the presence of hysterical symptoms, it is not just to argue that in such findings we have the anatomical basis of hysteria. The truth is that hysteria occurs in individuals of almost all types of organization, normal and aberrant. Every neurologist has seen hysteria in high-grade imbeciles, or has seen hysterical episodes in paranoiacs, and has seen the true hysterical stigmata in different varieties of insanity. On the other hand, he has seen under the influence of toxic causes, or mental strain, or profound physical exhaustion, or whatever cause, internal or external, a true hysteria develop in individuals not suffering from any form of insanity or arrested development.

DR. JOHN K. MITCHELL, Philadelphia—Several questions have been asked about the uses of massage. As to why oil should not be used, any one who has practical experience in manipulations with or without oil, or has attempted at all to do them himself, knows that deep kneading, which is the most important procedure of massage, altogether the most important, can not be properly done with the skin oiled; further, that any diminution of the small amount of friction which takes place between the skin and the hands of the operator is undesirable, because that friction is part of the treatment and should not be lessened in that way. This is quite apart from the unpleasantness of being greased all over, and the encouragement of the growth of hair, which you will find in women, is a great objecton to the use of oil.

Dr. Cooper asks why I did not preach a sermon for which I have not had the text supplied. If he will supply the text in the person of a patient for whom he wishes to know the proper moral treatment, I shall be glad to try to answer him. The moral, unlike the general physical treatment, is different in each case, and must meet the exigencies of each particular problem.

Dr. Herman suggests that effleurage massage might be used. I distinctly said not effleurage. Deep kneading is the kind of massage we make most use of. Effleurage is extremely irritating to most nervous patients.

As to contraindications, these are not very numerous. Certain forms of acute disease seem to me to stand in the way, and, of course, the dispositions of certain patients render them unsuitable subjects for this form of treatment. We began by excluding such cases; we began by saying in what way the cases suitable for the rest treatment should be selected.

Finally, Dr. Hughes, who had not heard what I said, criticized what he thought I had said and what he thought I had omitted. I am quite sure that no sane person has ever proposed the rest treatment as an exclusive system or a universal panacea, or said that it is desirable for all cases; and Dr. Weir Mitchell has repeatedly said that he never thinks of using it until every other possible means of treatment has been exhausted. As to its being a method suited only for women suffering from too much fashionable society, I think I treat almost as many washerwomen and quite as many school teachers as those from any other class of life. If these persons are overstrained from social diversions I am afraid the poor souls will not be allowed much amusement. I can only insist and repeat, finally, that it was not proposed as a universal panacea, but only as a last resort, because of the immense time which it takes, and the great expense which it entails.

HEREDITARY SUBNORMAL COLOR-PERCEPTION.*

F. SAVARY PEARCE, M.D.

Clinical Professor of Nervous Diseases in the Medico-Chirurgical College of Philadelphia, and Neurologist to the Philadelphia Hospital.

PHILADELPHIA.

Subnormal color-perception frequently presents a grotesqueness which always subtly attracts the attention of students of medicine and psychology. That there is a physical basis for this aberration of the sense of sight, is proved, although at times it seems necessary to search for the origin of the peculiar condition by assuming some metaphysical or vital perversion of energy of the human body causing an incoördination of neuronic action from the impinging light rays. Speculation, however, may be indulged in as to this type.

The more intimate we become with the knowledge of family histories found in such types of diseased functions, the more apt we shall be in determining the possible atavistic tendency to this state; and in knowing this possibility, we are as physicians made better able to cope with the broad subject of consanguinity of marriage or, indeed, of marital union of persons having any "weak points" in their moral, mental and physical composition. Then, too, the subject of education in this broad light is interesting food for thoughtful research. This optimistic side of evolution can be better balanced with degenerative tendencies in the race; and by detailed studies, therefore, of regeneration and tendencies to shoot into a higher life, we may hope to bring it about in some measure. The preceding thoughts emanate from the fact that lowered color-perception occurs much less frequently in women than in men. By some it is said that only one woman in 3000, or .03 per cent., is subject to perversion of the color sense; and that one in 25 men, or 4 per cent., is so affected. This difference must be largely due to cultivation. It is also patent to us that acuteness of color-perception varies in persons of the same sex. In a recent "Study of the Deaf and Dumb,"[1] the impression has come to the writer's mind that they have a peculiar nicety of perception of the sense of color. It is very likely a compensatory epiphenomenon, just as the blind are said to be more acute in acoustic and touch perceptions.

The rather rare condition of an instance of color-blindness in a woman, as recorded by Drs. Holmgren, Jeffries and others, bears also on the subject of the heredity of the disorder, inasmuch as the transmission of the color-defect frequently runs through several generations, much as do the organic pigmentary defects of the retina and optic nerve degeneration as shown by Leber, Habershorn, Norris, Oliver, and Gould.

In reference to relational ties in such cases, Wilson and Jeffries tersely say that few of the adult color-blind whom they have tested did not know of some blood relative similarly affected. Consanguinity in ancestral marriage has long been known as causative to a marked degree.

Horner's law as to the hereditariness of subnormal color-perception bears very notably on all such cases. Briefly, he says: "The general law is, therefore, that sons of daughters whose father was color-blind are most likely to be the same, although not without exception; or color-blindness is transmitted in the revertible type from grandfather to grandchild." In support of this, Magnus says: "The heretidariness of color-blindness has been known as long as the defect itself. All who have seen many color-blind will have noticed that it was in their mother's family that other cases were found. I have frequently been assured that this or that cousin on the *mother's* side was also color-blind; and, now and then, that a more distant relative of the mother had also color-blind sons. In view of Horner's law, this is readily explainable; and this peculiar law is all the more interesting since we find that it is the same in reference to the heredity of other physiological abnormities or defects."

As a more or less imperfect contribution to the subject, the record of the following case is herewith given. J. W. T. reported at my office on Feb. 15, 1898, suffering from hypochondriasis and recurrent melancholy. The man was very intelligent, and it was evident his social position, living among a set of uneducated relatives, "much annoyed" him. He had well-marked arteriosclerosis. The urine contained pus from the bladder cells and was alkaline in reaction—this the result of chronic cystitis following hypertrophy of the prostate gland. There was slight accentuation of the aortic second sound, but there were no evidences of other organic disease elsewhere in the body. There is no need of detailing mental phenomena other than stated.

This man could not distinguish red from green. The eyegrounds and the interior of the eye appeared normal.

* Presented to the Section on Nervous and Mental Diseases, at the Fifty-first Annual Meeting of the American Medical Association, held at Atlantic City, N. J., June 5-8, 1900.

1. American Annals for the Deaf, January, 1901.

There were no reversals nor contractions of the visual fields nor optical defects. He had discovered the abnormal color-perception years ago while a seaman, when he frequently placed red and green lights in false positions, thus causing him to lose his situation.

Of his children, one had chorea; one daughter was very nervous; one suffered from lateral curvature, and a girl aged 15 years also, on repeated testings, had been proven to have a lowered degree of appreciation of red and green. She was well otherwise. There were no other discoverable cases of subnormal color-perception in the family.

The patient's mental fabric was always queer. A year after I saw him he became insane—delusional—and was committed to an asylum for the insane, in which he died some eight months later. Dr. D. D. Richardson, in the State Hospital for the Insane at Norristown, was kind enough to send me the notes of the autopsy, in which it is stated that there was an absence of organic disease of the brain.

This case is most interesting because, in the words of Oliver,[1] "this fault of optic-nerve structure, which does not show itself for several years after the birth of the individual, indicates to the writer's mind at least that there is an inheritance of a physical material which is not only shorter lived than that which is found in the same organ in other organisms, but that it has a briefer existence than the other organs in the same general organism, a fault which shows that an imperfect material has been born, and dies prematurely because it is subjected to an amount of wear and tear that would not seriously disturb or injure a properly formed substance. Further, it serves as a living evidence that a substance has been improperly made, most probably on account of physical imperfection and repetition of faulty cell combination of similar kind extending through several generations; an evidence, which in measure, says that primarily acquired pathological characteristics of structural form may be transmitted through forthcoming generations, as imperfect formation of similar structure in due proportion to both the want of hygiene and care given to the afflicted subjects, and the reassociation of similarly degraded developmental cells; an evidence which gives answer in part to the transmission of ordinary structural characteristics, which, if acted upon in the same way as those which are not made, as it were, in the same peculiar manner, will produce far different and even what may be determined idiocratic results."

Singular as it is, the idealistic genius may yet be subject to subnormal color-perception, as in the case of our poet Whittier. In these instances we are baffled by man's limitations of knowledge to an annoying degree.

1407 Locust St.

DISCUSSION.

DR. G. W. DRAKE, Hollins, Va.—The paper is valuable to me in the fact of its arguing a physical material basis for the trouble. Heredity and environment make the man. Heredity has reference to the material constitution. We transmit to posterity our material peculiarities and so we transmit these mistakes or errors of function—abnormalities of form and structure. Color-blindness is the result of an abnormal condition of the color or visual center, which may be transmitted from father to son, and you will find it often traceable to heredity. The paper is valuable in that respect, and I note and call attention to the fact that there is a growing tendency—and you will notice it in every meeting of the ASSOCIATION—to materialize these troubles, and, as I remarked yesterday, some of our diseases that are misnamed will be corrected. I think the paper is a very valuable contribution to the Section.

DR. ROBERT H. PORTER, Chicago—In reading and discussing papers before this Section the word "abnormal" is often used when "morbid heredity or morbid nerve manifestations" would more accurately express the idea of the reader or speaker. When disease makes sufficient impression on the organism to be transmitted from one generation to another, to simply say that it is an abnormal manifestation, the term is hardly accurate enough to convey the proper idea or meaning. It requires a strong impression to make the individual deviate from the normal and in medicine at least the effects should be called morbid, instead of abnormal. The paper read was of great interest to me on account of showing the relation that color-blindness has to other tendencies to degeneration. Most morbid nerve manifestations are associated with deterioration in some part of the nervous system. And, in the study of these problems I think that as the pathologist increases his investigations and the powers of the microscope are extended, the tendency will be to find structural change in the nerve cells. Perverted nutrition and disordered circulation of the blood are associated with most chronic nerve maladies, and sooner or later these are likely to produce structural changes in the cells or fibers of the nervous system.

DR. F. S. PEARCE, Philadelphia—I wish to express my wonder that all this mysterious class of hereditary disorders being transmitted through the unaffected mother as a rule, and generally to a son, as for example, in hemophilia. Pathologists tell us that a pigmentary degenerative disease of the retina is transmitted in the same fashion, i. e., through the mother, and presenting signs only in the male sex. While the point mentioned in the paper—early youth being the time for the manifestation (not that I believe subnormal color perception exists in earliest c... abood in the majority of instances and the patient simply did not know that he was color-blind)—is unexplained, it may be that after a beginning steady use of the eyes, the faulty structure existing, a chemical change in the cell takes place, which may not even be seen in our methods of careful microscopic examination. Then, when the sight is taxed, the cell-function is overwrought, and finally degeneration takes place, bringing about the abnormal or morbid function at this particular epoch of life.

1. Proceedings, American Philosophical Society, vol. xxxii.

THE SIMPLEST EXPLANATION OF THE FUNCTIONS OF THE NERVOUS SYSTEM.*

G. W. DRAKE, M.D.

Resident Physician and Professor of Physiology, Hollins Institute; Emeritus Professor of Physiology, Chattanooga Medical College; Ex-President, Tennessee State Medical Society, Etc.

HOLLINS, VA.

This paper is designed to be simply a suggestive presentation of the subject, not an exhaustive exposition. It is a brief rehearsal of the method employed by me in teaching physiology at the Chattanooga Medical College.

The key to the simplest explanation of the functions of the nervous system is, in my opinion, to base all nervous phenomena on the hypothesis of the existence of a specific energy peculiar to nervous tissue. It also very much simplifies the explanation to give to this energy a distinctive name and assign it a place with the natural energies. Conferring on it the dignity of a name will emphasize its importance, and it will be easier and more interesting to study its action and formulate its laws.

The rapid development of the laws of electricity, and its many practical uses are, doubtless in a great measure, due to the differentiation and naming of this energy so soon after its discovery. It was better that Röntgen's discovery was named X-rays than to have had no name.

It would not be inappropriate to call the specific energy, peculiar to the nervous system, "neuricity," from the Greek *neuron*, as electricity was named from *electron*, and for no better reason. The brain contains storage batteries of neuric energy for the supply of motive power to all the muscles and other organs and tissues of the body. Every voluntary muscle has its little storage battery in the motor area of he brain, from which energy is discharged by the action of the

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will. When it is desired to move the arm, the will discharges the storage batteries for the muscles needed, and neuric energy flashes along certain fibers of the corona radiata, the posterior limb of the internal capsule, the crusta of the crus, the pyramids of the bulb, the anterolateral columns of the cord, out of the cord by the anterior root of a spinal nerve, and along that nerve and its branches into the muscles, causing them to contract. In an analogous way may be explained the motion of other parts of the body controlled by the action of voluntary muscles. By this method the anatomy of the brain, cord and spinal nerves is made a more interesting study, and the practical necessity of a knowledge of it is demonstrated.

In the medulla oblongata are located the little storage batteries for the supply of neuric energy to the involuntary muscles and to the glandular organs of secretion and excretion—to the liver, the lungs, the kidneys, the heart and blood-vessels, the salivary and peptic glands, etc. The spinal and ganglionic nerve-centers are subordinate storage batteries dependent on the dominating batteries in the brain, from which they are constantly re-energized. Sever their connection with the brain and the action of the organs which they supply soon ceases. The heart will beat when removed from the body, but only for a short time, on account of the impossibility of re-energizing its ganglia.

SENSATIONS.

Passing hastily over this part of the subject, we come next to the sensations. The simplest and most satisfactory explanation of the special senses is as follows: The brain, in the dark camera of the cranium, contains sensitive protoplasmic plates adapted to the formation of images by the action of neuric energy, and the pictures thus formed should be called neurographs. Sensations are the perceptions of neurographs by consciousness. The sensation depends on the neurograph, and the latter on the character of the cerebral plate on which it is formed and that of the peripheral endings of the nerves with which it is connected.

The Sense of Hearing.—Sound waves striking on the membrana tympani communicate vibrations to the internal ear, causing the liberation of neuric energy at the peripheral endings of the auditory nerve, and this is conducted to the auditory center of the brain, and there makes a neurograph of sound.

The Sense of Seeing.—Light from an object, falling on the retina, liberates neuric energy, which is conducted by the optic nerve and other fibers to the visual center of the brain, and there makes a neurograph of light. The beholder can not see an external object, nor its image on the retina, but a neurograph on the brain corresponding to the retinal image.

The Sense of Touch.—Mechanical touch communicating pressure to the peripheral endings of sensory nerves liberates neuric energy, which is conducted by afferent nerve-fibers to the sensory center of the brain, and there makes a neurograph of touch, corresponding to the character of the impression made on the peripheral nerve endings.

The Sense of Smell.—Odoriferous particles coming in contact with the membrane in the nose liberate neuric energy at the peripheral endings of certain nerves, and this is conducted to the olfactory center of the brain, and there makes a neurograph of smell.

The Sense of Taste.—Sapid substances in the mouth liberate neuric energy at the peripheral endings of gustatory nerves, and it is conducted to the gustatory center of the brain, and there makes a neurograph of taste.

The Sense of Pain.—Lacerations, lesions, and hurts of any kind liberate neuric energy at the peripheral endings of certain sensory nerve fibers, it being conducted to the pain centers of the brain, and there making a neurograph of pain corresponding to the impression on the part affected. The sensation of pain is the perception of a disordered or abnormal neurograph, and has a material pathologic basis, either in the cerebral plate or some part of a sensory nerve with which the latter is connected. Every ache and pain has a material pathologic basis—a molecular disarrangement or displacement of matter.

The Sensation of Heat.—Sensations of heat are the perceptions of neurographs of heat formed on the brain by neuric energy conducted from the peripheral endings of sensory nerve-fibers, and liberated by the application of heat.

I do not believe that the heat and pain centers of the brain are the same, and I do not believe that either is identical with the centers of touch and general sensibility. These centers are as different as the sensations of which they form the material basis. Form determines function. Internal molecular changes are not necessarily manifest in a change of the superficial form, but they are, nevertheless, the basis of altered function. There is a distinction between internal and external form. The latter is visible, the former invisible. After the departure from a mass of matter of vital energy the internal form is changed by the action of chemical energy, and so the physiologist is prevented from determining the character of the living form, the microscope revealing only the superficies of the dead bodies, and chemistry analyzing the constituent elements.

The relative positions of molecules in cells and atoms in molecules are changed after death, and they doubtless undergo many changes in life, in response to the action of the various natural energies, but all modified and dominated by the presence of vital energy. It is interesting to study the neurons in the brain, and to imagine the great diversity of molecular movement produced by the action of neuric energy. The brain is a living kodak, constantly at work taking sight, sound, smell, taste, touch, and also mind pictures. It is covered over with neurographs resulting from "impacts" and "impulses" on peripheral nerve-endings in the various sense organs, and also from impulses of the mind. These neurographs are discernible to the consciousness of the individual in whose brain they are formed, but can not be demonstrated by scalpel or microscope. They are the product of the changed relations of molecules in neurons or atoms in the molecules or changes in both.

Consciousness learns the significance of these changes by experience, and transmits its knowledge to the mind.

It is important to make a sharp differentiation between brain and mind, and to avoid the use of the terms cerebral and mental as interchangeable synonyms. The brain is the mind's organ and medium of manifestation. It is the head of the nervous system, and contains different centers for the different faculties of the mind, and separate centers for the various sense organs, muscles, and glands of the body, together with pathways for neuric energy between the central and peripheral nerve-endings.

The study of the cerebral centers, their intercommunications and their nervous connections with the peripheral organs and tissues, is essential to a knowledge

of the causes of the various insanities and monomanias, the defects of the special senses, and the disorders of muscles and glands.

Not alone because the brain contains the intellectual and other psychic centers is it the most important organ in the human economy, but also because it contains the dominating storage batteries of neuric energy essential to the normal condition and functional activity of every tissue and organ. Centripetal and centrifugal energies control the movements of the planets, gravitation pulls the apple from the tree and hurls it to the ground, electricity runs the telegraph and telephone, and neuricity governs the man machine.

The energies are only known through their action on matter, and their names are arbitrary and conventional, but none the less essential and convenient than those of matter. Much would have been gained by assuming, long ago, the cause of nervous phenomena to be one of the natural, energies, and giving it a specific and permanent name. While I do not insist on giving the agent of nervous action the name "neuricity," I do protest in favor of some name, any name, even if it be Y or Z, X having been already appropriated. Dispensing with such ill-defined and obscure terms as "nerve force," "nerve impulse," etc., which tend to confuse, and fail to satisfy the student of physiology, will remove much vagueness and greatly facilitate the study of neurology. I would be glad to see a uniform and systematic study of neuricity inaugurated, with the view of unfolding its laws, and demonstrating its correlation to the other natural energies. By this line of research will be developed the simplest explanation of the functions of the nervous system.

The failure to properly differentiate brain and mind has assigned to the domain of metaphysics and psychology work which belonged to the departments of physics and physiology. The functions of the brain are often confounded with the faculties of the mind, and, as a consequence, cerebral are misnamed mental diseases.

DISCUSSION.

DR. D. I. WOLFSTEIN, Cincinnati—I think that the reader of the paper is to be congratulated for having evolved for himself and the students a rather simple set of similes which are to make nervous force seem plain to them, but I do not think that anything could be done to the science by denominating the nervous force as neuricity. It is only a multiplicaton of terms to say neuricity. It reminds me of the saying of Goethe, that when our proper ideas are completely wanting the proper word usually occurs to us. I think this is the case here. The gentleman is naturally attempting to bring back to a material basis a great many things that probably never will be explained on such a basis, although that is the hope. As I said, I simply wish to emphasize the fact that it would be rather undesirable if we would want to introduce into the already overburdened nomenclature a class of names that would not simplify the subject.

DR. G. W. DRAKE, Hollins, Va.—It is very evident that my friend and critic did not comprehend my paper. I have had this theory, as you might call it, in my mind for years and years, and this is the first opportunity I have had of putting it on record, and I want it on record, because I believe the future will show the justice of the claim I make. Scientific investigation is coming around every session toward the views advocated in my paper. Note the session at St. Paul and every one we have had for several years—they all made the material basis of nervous phenomena paramount. But I have reference to his mistaking my meaning. I said I did not care anything about the name; just let us determine on some specific name, so that it could be studied as an entity and not a vague and obscure thing. The force or energy I am describing, I will take his name for it, if he will take my theory. The mistake he made was in believing that I confound neuric energy, as he said I changed the names several times; I did not. He may say I change the name electricity when I say electric energy. I spoke several times of neuric energy instead of saying neuricity.

Just give that peculiar energy which belongs to the nervous system a name, or give it no name, but study it as an entity and as one of the natural energies, but I do insist on a name of some kind. But it is not vital energy; that is the point, showing that he did not comprehend my paper at all. Vital energy is in every cell of not only the human being, but in every cell of every vegetable in the universe. Every cell has vital energy, but nerve-cells alone neuricity, a peculiar energy associated with the nervous system. Force and impulse and all such terms are confusing. A peculiar energy belongs to the nervous tissue. Whether it is confined to it I can not say. If you will give that a name and study it, it will greatly facilitate the explanation of nervous phenomena.

PSYCHIC THERAPEUTICS.*

J. C. CULBERTSON, M.D.
CINCINNATI, OHIO.

A dictionary definition of this term says, it is "a systematic use of personal influence, especially that of the physician, in treatment of nervous diseases." In this definition may be found a good and sufficient reason for the success of some practitioners of medicine and apparently unaccountable failure of others. Nor is failure or success attributable to the specific materia medica remedies made use of by the physician in attendance upon the sick.

The influence of the mind over the body in conditions of health as well as of disease is always paramount. In a consideration of this influence, it is desirable that we remember the prime subdivisions indicated by the will, intellect and emotions. Together, these constitute and are the faculties of the mind. In health they are in a state of equilibrium. In sickness the balance is disturbed. The will becomes weakened, as shown by an increased pliability and eccentricity. The intellect is disturbed, which is manifest in an impairment of judgment and ability to reason, while the emotions through weakness itself become exaggerated.

These are the general physical and mental conditions which confront the physician in his daily work, and the way in which he meets them is of equal significance with his prescription. If he inspires confidence by his presence, a material factor has entered the lists as a remedial agent, but skepticism or doubt of professional ability will act as a disadvantageous element in its psychic influence upon any patient. Hence, the doctor himself becomes a powerful therapeutic agent. When strong in his perceptions, firm and positive in opinion, confidence is engendered. His will and judgment are made to dominate that of the patient and patient's family.

On the other hand indecision, wavering and apparent uncertainty militate against both physician and patient to the degree in which it is apparent. There is a psychic element present in all conditions of disease; and in some maladies may be said to hold the fort. So dominating are they in character that they sometimes completely overshadow actual pathologic states. This is particularly the case among many who are highly educated, refined and cultured. Their education, culture and environments develop a supersensitive organism of the mental and nervous system that is productive of symptoms of hysteria with its long train of sympathetic troubles ascribed to so-called functional derangements. So strong are these influences, that they not infrequently dominate and mask everything else that is manifestly present in a given case.

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The first and most important factor in a treatment of all such cases is to be found in a systematic use of the personal influence of the physician over his patient. This will take character and manifest itself in accordance with the dictates of his own judgment, and his plan of treatment will be as variable as the number of patients recorded on his visiting list. A discriminating use of positive instructions with placebo adjuncts is often as imperatively required as a so-called heroic treatment with drugs. Because of a recognition of this potent element in a treatment of diseased conditions, many, not a few, but many old practitioners become more or less skeptical in their appreciation of the value of drugs as curative factors, and their public expressions along these lines give a strong support to so-called hypnotists, "christian scientists" and faith-cure believers.

"A legitimate practice of medicine takes cognizance of all psychic influences and turns them to account in a treatment of disease. The personal influence of a physician should always be firm, not vacillating, positive and never negative. These attributes tactfully administered are sedative and may be anesthetic and narcotic. They possess the therapeutic property of being able to allay irritability and excitement. To illustrate: a visit to a dentist will usually allay the torment of a toothache, while the entrance of a physician within the lying-in chamber ameliorates if it does not completely arrest the throes of labor pains in a parturient woman. The personal influence of the physician in these and a whole host of actual pathologic as well as functional disturbances may become a most potent factor in this treatment.

Phobia or fear and joy are powerful psychic factors in both cure and causation of disease. Either will in a supersensitive individual produce pain or fatigue, exaltation or depression, thereby exciting the entire sympathetic nervous, muscular and glandular functions of the body. Under their influence the sphincters relax, a large amount of light limpid urine is voided, the functions of the liver and alimentary canal are disturbed, being either suppressed or exaggerated. For a control of these abnormal states or conditions the personal influence and suggestions of the physician are singularly powerful and effective.

This same personal influence of the physician is often most potent as a therapeutic agent when agreeing with the expressed or unexpressed wishes and desires of the patient.

Hope, the very anchor of the soul, prolongs life and sometimes saves it through the cheerful and positive assurance of the attending physician. The wise man who is a successful practitioner, uses his personal influence as a stimulant, sedative, anodyne, narcotic, anesthetic and nervine; and does it systematically, as though it were as important a therapeutic measure as the giving of a tonic, purgative or opiate. It is this personal influence that makes some men great and others small.

All that is known of the entire materia medica, as well as other resources in the art and science of medicine, are as wide open to the command of one physician as of another, and the differentiation between them is founded upon but two accomplishments: ability to diagnose pathological conditions and a systematic use of personal influence in the treatment of disease. All other therapeutic aids are but valuable adjuncts, not one of which is to be for one moment in the slightest degree deprecated, for they are cofactors of the greatest importance. It is this systematic use of the personal influence of the physician that gives any foundation to christian science or faith curists. Eliminate this one powerful agent and there is nothing left of a visionary vagary.

The influence of environment and suggestion is as much a legitimate part of the reputable physician's armamentarium as a medicine chest or an instrument case; and no part of their value as therapeutic agents is conceded as belonging to quacks and charlatans. The whole domain of life, with all that is collateral to it from horizon to horizon, is in the broad and unlimited field of legitimate medicine. The personal influence and its systematic use is but a single therapeutic agent, and it is so potent and so powerful that its importance can not go unrecognized in a successful practice of the healing art.

DISCUSSION.

DR. T. B. GREENLEY, Meadow Lawn, Ky., said that he had seen a number of hysterical cases in which the symptoms were due directly to suggestions by the patient's friends. He referred to one case, that of a young woman who lost her voice. He decided that it was all imagination and gave her a placebo, but gave her very specific directions as to its use, and found her all right at the next visit. Another thought she was paralyzed and had spells like convulsions, which were clearly excited by the suggestion of her mother. He left a liniment with very particular directions about its use, and the next morning she was all right.

DR. A. BERNHEIM, Philadelphia, said that suggestion treatment loses some of its value by show performances. He thinks that doctors can do a great deal of good by psychotherapeutics. He has seen several cases treated and cured by psychotherapeutics. Hypnotic exhibitions are prohibited by law in Germany, as they may do much harm when in the hands of charlatans, and particularly because many patients may resent any treatment that has been exhibited on the stage. Psychotherapeutics can be utilized in practice. He cited the case of a young man who had to rise ten or twelve times a night to urinate. No cause for this could be found. He told him firmly that he must not get up, and the patient informed him later that he has since only had to get up once at night. He tested him by asking him if he ever had earache, and the next time he came, he said that he had earache.

DR. F. G. WHEATLEY, North Abington, Mass., said that the paper opens an exceedingly important field of therapeutics and one which teachers of therapeutics do not sufficiently recognize in the regular course of instruction given in the colleges. The tests of the ordinary medical examining board do not take into account the personality of the individual at all, and yet this personality is such an important element in the success or want of success in life that it seems as if it should be taken into consideration in granting licenses to practice medicine. The power of some physicians to influence patients has more to do with their success than their scientific attainments. A man may learn all that can be learned and pass his examination with great credit and go into practice and be a failure because he can not impress his clients with the idea that he can do them good. This power is not only of value in hysterical cases, but in others as well. If we can make our patients believe that we know what we are about and can do them good, the results will be satisfactory, but if we simply give them advice, without impressing on them our personality, we lose a great element of success. As the speaker said, there is an imaginary element in therapeutics and the use of this is one element of success. This is now principally in the hands of "Christian scientists" and the like. Until the medical profession meets this in a proper way we shall meet with persons who believe that faith and Mrs. Eddy can cure them when the best doctors fail to do so.

DR. J. N. UPSHUR, Richmond, Va., cited the case of a woman who had been sick for three weeks with gastric catarrh, but not of much moment. She had been in the hands of a young physician, who had certainly failed to impress her with his personality. At the time the speaker saw her she was not only convinced that she was very ill, but she was certain that she would die very soon. He made some recommendations which the doctor failed to carry out. Ten days afterward she was thoroughly disgusted with the treatment and, getting no better, the speaker was sent for and the other physician dismissed. It was learned that she had been in such great pain that the doctor had been giving her large amounts of morphin

hypodermically daily. These were promptly stopped and she was told she would have to get along without them. She thought that she had a tumor in the neighborhood of the right ilium, and complained of persistent pain on that side. The speaker took a tape line out of his pocket and proved to her that both sides measured exactly alike and that there was no tumor. He never heard a word afterward of this tumor, and she got well very soon.

TREATMENT OF DEFLECTION OF THE NASAL SEPTUM

COMPLICATED BY TRAUMATIC DEFORMITY OF THE EXTERNAL NOSE.*

E. B. GLEASON, M.D.

Clinical Professor of Otology in the Medico-Chirurgical College; Physician in Charge of the Nose, Throat and Ear Department of the Northern Dispensary.

PHILADELPHIA.

For the purposes of this paper, deformities of the external framework of the nose are divided into two classes: flattening of the bridge of the nose, producing the deformity commonly called "saddle-back nose," and deflection of the end of the nose. A third class might be made of a combination of these two conditions, but would be without significance as far as concerns operations on the septum to secure increased breathing space. It should be borne in mind that operations upon the septum produce little effect upon the shape of the external nose, and are undertaken for the sole object of improving the breathing space.

Traumatic flattening of the bridge of the nose is generally due to the fracture of the base of the nasal bones, with dislocation from the nasal processes and depression of the nasal bones, with rotation outward on their long axes. The upper shield cartilages and sometimes the septum are involved. The most common lesion of the septum is a dislocation of the triangular cartilage and anterior portion of the vomer from their bony attachments. Both below and behind there is a deposition of new material, and usually a thickening, both of bone and cartilage. The result is the so-called septal redundancy. The septum has become too large to be crowded into the median line. The cartilaginous plates of the septum are also sometimes separated. Saddle-back nose does not interfere in the least with the success of an operation for deflection of the nasal septum, but lateral deflections of the external nose decidedly complicate matters.

Lateral deflection of the end of the nose is usually the result of fractures of both nasal processes, the nasal bones and displacement of the upper shield cartilages. The septum may or may not partake of the deformity. If it remains straight, it will no longer be parallel to the curved lateral nasal walls.

If deflected to a greater degree than the lateral walls, it will produce stenosis by encroaching upon the lumen of the naris of the concave lateral nasal wall. Therefore, the problem, in cases of stenosis in noses deflected to one side, is not to make the septum straight, but to render it as nearly as possible parallel to both lateral nasal walls. This is sometimes not easy to accomplish.

The methods that may be used to bring the septum into the median line will be considered with reference to septal redundancy, with reference to resiliency, and also with reference to the method of supporting the deviated area in its new position.

The simplest operation for the correction of septal deflection is expanding the strictured side of the nose with the index finger, which, with a slight boring motion, and with its palmar surface pressing upon the septum, is thrust through the anterior naris to a position beyond the deflected area. When carefully done the triangular cartilage thus can be dislocated from its attachments below and behind. The fragments overlap each other, thus providing for redundancy in both the vertical and horizontal diameters. The dislocated cartilage may be supported in a vertical position by a pin or tube. The operation has the advantage of being submucous. If septal redundancy was the main cause of failure in operations for the correction of septal deflections, nothing could be more simple or better than this operation.

It is not septal redundancy, but septal resiliency that is the main cause of failure in operations for deviated septa, and, because in operations where the mucous membrane of the septum is uncut, it is impossible to thoroughly bend the triangular cartilage; this operation commonly results in failure more or less complete; the septum sometimes remaining for several months in a vertical position and then gradually springing back into its former abnormal position.

The objections to simply removing the thickened angle of a deviated septum is that while it increases the breathing space in the narrow naris, it leaves the unobstructed naris in the same condition as before the operation. Often it is of the unobstructed naris that the patient complains and frequently when the ears become diseased, as a result of a septal deviation, it is that upon the same side as the unobstructed naris which becomes affected first.

Sajous describes in his book, published in 1885, what, he states, is the simplest operation for the correction of septal deviations. An incision is made along the crest of the deviation. The upper or movable flap of the septum is then pushed over and beyond the lower into the median line. It seems unnecessary to state that in Sajous' operation, when the upper portion of the septum is pushed over and beyond the lower, because of the septal redundancy, the parts overlap and the resistance of the lower flap tends to prevent the return of the upper into its former deflected position; but because a straight incision does not enable the flaps to overlap except in one diameter, either the horizontal or vertical redundancy is not provided for, and hence the resiliency of the septum is increased by the bending of the upper flap; because in either the vertical or horizontal diameter, the septum is crowded into a space too small for it.

In 1895, Watson described an operation, which he stated, was a modification of the well-known procedure of Ingals, but which was really a combination of the operations of Ingals and Sajous. A beveled incision was made through the crest of a horizontal deviation, and the vertical redundancy cut out with a knife, care being exercised in making both incisions that the mucous membrane on the concave side of the septum remained intact. In a paper published in May, 1899, he described his incision as along the crest of a horizontal deviation with a vertical cut from the anterior point of the first incision. The mucous membrane of the concavity of the deflection not being included in either incision, the first of these operations would seem to yield two triangular flaps; the second, one large triangular flap. Because the mucous membrane of the concave side of the septum is not cut through, and hence would prevent thorough bending of the flaps, it would seem that the operator's main object was to provide for redundancy, which is accomplished to the same degree as in the

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operations of Roberts and Asch, who also employ triangular flaps. Redundancy of a septal deviation, both in the vertical and horizontal diameters is provided for equally well by a stellate (*), a cross-shaped (+), an L-shaped, an inverted T-shaped, a horizontal H-shaped (H) or a U-shaped incision. This is not the case as regards resiliency.

Roberts stated that unless the resiliency of the flaps is thoroughly destroyed his operation will be a failure. Asch is almost equally emphatic as regards the necessity of thoroughly bending each flap in order to diminish, as far as possible, the resiliency of the septum. Doubtless the success of any operation for the correction of a septal deviation depends more upon the thoroughness with which the flaps are bent than upon any other detail of the technique.

It is the india-rubber-like resiliency of the septal cartilage, rather than the redundancy of a septal deviation, that interferes most with the success of operations for the correction of deviations.

Is there any method of overcoming this resiliency besides thorough bending of the flaps, which in the case of cartilage is never entirely destroyed by the most thorough bending? Leverage may be utilized by employing a quadrilateral flap. If its base be bent, the longer such a flap the more leverage has to be overcome to bring the edge of the flap into its former position. This is not true of triangular flaps, because the larger the flap the larger its base and consequently the greater its resiliency. The principle may be demonstrated by cutting flaps of various shapes in india-rubber balls. A narrow quadrilateral flap remains almost without support in the position in which it is bent. A triangular flap of the same size does not.

In lateral deflections of the whole tip of the nose, the part of the septum involved usually is not great and the deflection is of the so-called vertical variety. In some cases the area involved is not wider than the thickness of a lead pencil. It is difficult to understand how any operation by means of one or more V-shaped flaps could be done in a case of this kind. A U-shaped incision around the deflection, however, is readily made and yields a narrow quadrilateral flap consisting of the entire deflected area, and when the base of such a flap is thoroughly bent, it will sometimes hang in the position in which it is placed without any support whatsoever. If allowed to remain unsupported in the previously unobstructed naris the gradually returning resiliency of the base of the flap and the traction of granulations adhering from the upper ends of the U-shaped incision will gradually draw such a flap into the vertical line in the majority of instances; but there is always some danger of overcorrecting the deflection. It is, therefore, best to see that the flap is in the position desired one week after the operation. This was the method pursued in six cases of lateral deflection of the whole tip of the nose, four of which were exhibited at the Philadelphia College of Physicians.

The technique of the operation is as follows: The field of operation is cocainized and then exposed by means of a self-retaining speculum. A thin saw is introduced along the floor of the nose beneath the deviation. The sawing is continued in a horizontal direction until the saw has penetrated somewhat deeply into the tissues. The direction of the sawing is then rapidly changed to a nearly vertical direction. During the sawing it is of the utmost importance that the saw should be held exactly parallel to the septum; in order that the cut shall be around and not through any part of the deviation. The length of the vertical crura of the U incision is then quickly lengthened by means of a small bistoury curved on its flat, and the flap is thrust through the hole in the septum with the tip of the forefinger.

While the finger is still in the naris, it is carried up along the anterior and posterior crura in order to be certain that the edge of the flap has completely cleared them and the neck of the flap is then sharply bent. The whole operation can be done with considerable deliberation in two minutes. It is not necessary to denude the edges that are in contact, as the pressure results in necrosis at least of the superficial layer of the mucous membrane, after which the parts unite. Should nonunion result, the edges may at any time be freshened with a ring-curette, a simple and painless procedure.

It is well to slip in a tube immediately after the operation and decide twenty-four hours afterward as to the necessity of wearing it. The tube serves to control the usually trifling hemorrhage which, however, may be so excessive as to require the insertion of a large plug of absorbent cotton saturated with peroxid of hydrogen into one or both nostrils.

In my earlier operations for correction of septal deflections, I invariably used an Allen tube when support was required; later, a tube devised by Dr. D. Braden Kyle. This tube is somewhat similar in shape to those of Asch and Meyer, but is made of pewter and so thin that its shape can be modified by pressure of the fingers, or quickly pared to any desired shape with a penknife. Most recently I have had the Allen tube slightly altered in shape and made of this same material, and I find the readiness with which its length and shape can be altered to be a great convenience.

However, the question of support is of little consequence in comparison with that of counteracting the resiliency of the septum. The writer claims for his method of operating that the shape and position of his septal flap enables an operator to overcome resiliency more certainly than by any method previously described. When the resiliency of a quadrilateral flap has been destroyed, at least for the time being, by bending the neck of the flap at a right angle, the overlapping of the edges of the flap upon the septum as occurs in the operations of Sajous, Seiler, Watson, etc., affords sufficient support in more than 80 per cent. of the cases, and no tube is required. Beveling the edges of the flap is of no consequence, because it does not increase the resistance tending to prevent the return of the flap to its former deviated position.

DISCUSSION.

DR. J. O. ROE, Rochester, N. Y.—I have been very much interested in Dr. Gleason's paper. His operation, as he has described it, is, however, like the Asch operation, adapted for the correction of deviations of the cartilaginous septum, and therefore adapted only to about one-third of the cases of deviation of the septum. The deviations of the septum may be divided into deviations of the bony portion, which comprise not more than 10 per cent. of the cases, deviations of the osseocartilaginous portion, which comprise fully 60 to 65 per cent., and deviations of the cartilaginous portion alone, which comprise about 25 or 30 per cent. of the cases. Therefore, in considering the correction of deviation of the septum we should take into consideration the correction of deviation of every portion of the septum and not the correction of the cartilaginous portion alone. In correcting lateral deformities of the nose, the lateral displacements which so often result from injuries, we have to take into consideration two conditions: 1, the cosmetic effect, and 2, the establishment of a normal condition of the nose for respiration. In operating for a cosmetic effect it is important that we should not lose sight of the respiratory function. Many patients apply to us for the correction of a deformity

of the nose, rather than for the relief of insufficiency of respiration caused by the associated deviation of the septum. In correcting the deviation of the septum, therefore, we should take into consideration the correction of the osseous portion as well as the cartilaginous portion of the septum. For the purpose of correcting deformities of this portion of the septum as you may know, I devised a method of correcting it by means of fenestrated forceps.

One of the difficulties, as the Doctor has stated, is in overcoming the resiliency of the cartilage. In my experience this can not readily be overcome unless we correct the deformity at the osseocartilage junction. This is most easily *done by* means of the fenestrated forceps. If we attempt to force the deflection of the septum up to the median line with a flat bladed forceps we find it well nigh impossible to overcome the resistance, or re-fracture it at all, but by means of the fenestrated forceps, as I have indicated, you can force the deflection beyond the straight line as far as you choose. Thus you can refracture it without rotating the forceps and lacerating the septum. Some cases of brain abscess have been reported attributed to the laceration of the septum from the use of the flat forceps. With the fenestrated forceps this is entirely avoided. Dr. Gleason's ingenious method avoids this danger, but is especially adapted only to special cases where the deflection is confined to the cartilaginous portion of the septum.

DR. F. J. QUINLAN, New York City—We have been following an operation in the Polyclinic which saves much of the slough we have heretofore had in these cases. I will illustrate this. When we find, on one side, the angular deflection of bone, we introduce on the other side a solution of boric acid, as much as the tissues will hold, which causes a great sagging. We then push the deflection into the sagging and let it be. The injection is made between the folds of the mucous membrane, a saturated solution of boric acid being used, and then we produce a convexity on the side of the deformity that we wish to overcome, and thus we are able to retain the integrity of the mucous membrane. I have done this operation several times. By the method I have described we cause mutilation of the tissues on only one side. The mucous membrane is intact, which gives it an additional splint-like structure and holds the septum so as to prevent it swaying to the other side. I have had two or three sloughs following the method described by the Doctor.

DR. DONNE, Philadelphia—I would like to add my experience to the excellent results the Doctor has obtained. I have made the U-shaped flap he describes, and the operation is of value in those cases in which the cartilaginous septum alone is deflected. I wish Dr. Gleason would give us the benefit of his experience in septal deformity complicated by traumatic deformity of the external nose. But taking the main subject of his paper, namely, the description of his U-shaped incision, I am thoroughly in accord with what he says. In some cases I have found the operation of Asch or that of Adams or Roberts of more value, but in the cases with a broad base, where the U-shaped flap can be well made, the operation described by Dr. Gleason has been particularly successful. In these cases it is our duty to operate wherever we can induce the patient and the friends of the patient to consent, because many of the cases of middle ear disease are due to deflections of the septum, and we can often relieve headache and chorea and some cases of asthma by these operations. I am in favor of using general anesthesia in these cases. I use, locally, the extract of the suprarenal capsule to prevent excessive hemorrhage and give a better opportunity to see the progress of the operation. The use of general anesthesia is of value because it gives better control of the case, especially in children, who are easily frightened by the appearance of blood and instruments. I have had a number of those cases and no untoward results have taken place. Very frequently the use of the splint for twenty-four hours has obviated any hemorrhage either during the operation or subsequently. One of the particular advantages of the operation described by Dr. Gleason is the fact that the septum is then held in position by the other portions of the septum, and the tube does not need to be used over twenty-four hours, which is an advantage over the operations in which the tube must be used for a long time. The operation overcomes resiliency better than any other operation I have done.

DR. E. B. GLEASON, Philadelphia—I will say in reply to Dr. Roe that when a man or woman comes to me with a deviated septum I straighten it by my method whether the cartilaginous portion alone or both the cartilaginous and bony portions are involved. In the case I have presented quite a large portion of the bony part of the septum was involved. When the bone is involved far back it is sometimes much harder to make a long posterior crux with the knife. I generally use a double-edged knife, curved on the flat, for the purpose. In regard to the operation referred to by Dr. Quinlan as being done at the New York Polyclinic, it is an excellent one in those cases where only a very small portion of the septum is involved and where the length of the flap would entirely counteract the septal resiliency. In those cases where a large portion of the septum is involved the preservation of the mucous membrane interferes with the thorough bending of the flap and would be disastrous. I do not see any great advantage under any circumstances in saving the mucous membrane as has been described; and as one of the chief advantages of my operation over those employing triangular flaps is that it better counteracts the resiliency of the septum, the main cause of failure in septal operations; the mucous membrane of the concave septal surface is invariably incised in order to permit bending the flap as nearly at a right angle as possible. If the neck of the flap contains bone it breaks with an audible snap and the resiliency of that portion of the flap at least is entirely destroyed and gives no further trouble. Where the case is complicated by some deformity of the external bony framework it is a question for the patient to decide whether or not he wants an external operation done. You can secure good breathing space without an external operation.

DR. ROE—In those cases in which you have a long bending of the septum extending from far back, if you were to cut a little segment in the middle and shove it through, the deformity would still exist. How do you do in those cases?

DR. GLEASON—I do not saw a little part out of the center, but I go entirely around the deflection. It makes no difference how large the deflection is. I have never seen a case where the pharyngeal edge of the septum was involved. I have never seen a case of deflection of the septum where, if I held the saw parallel with the septum, I would not saw around the deflection.

DR. ROE—When there is a large deflection you would practically have to saw the entire septum.

DR. GLEASON—I have sawed two-thirds of the septum, and few cases will be found more extensive. But I would go further if I found it necessary. This case shows involvement of a large portion of the bony septum.

DR. QUINLAN—Do you put one or two tubes in?

DR. GLEASON—I use a large tube, which should drop in easily, and not be thrust in. If the slightest pressure is necessary to insert the tube the operation has been improperly done. The morning after the operation the tube is removed, and in rather more than 80 per cent. of my cases not again inserted. This was the history in the case brought before you. He visited my office every day for a week or so that I might inspect his septum, and in the meantime attended to his usual duties.

EXTENSIVE LACERATION OF THE EXTERNAL OCULAR MUSCLES; DIPLOPIA; SPONTANEOUS RECOVERY.*

WALTER L. PYLE, M.D.

ASSISTANT SURGEON TO WILLS EYE HOSPITAL.

PHILADELPHIA.

History of the Injury.—The patient was a practicing physician, aged 44 years, in good general health, and had never worn glasses. While riding a bicycle across his lawn at night, he ran into a blunt splicing hook of a clothes-line made of No. 10 telephone wire. The end of the hook entered the conjunctiva of the right eye, near the inner canthus, and tore its way out toward the external canthus, keeping below the cornea. The conjunctiva, subconjunctival tissue, and ocular muscle-tissue were extensively lacerated, and the end of the hook was found to be covered with blood, shreds of conjunctiva, subconjunctival tissue and fibers of muscle substance. The sclera was not perforated. The eye was dressed antiseptically and free boric acid irrigations were employed. Bleeding was quickly checked, and the wound healed kindly. However, there was immediate diplopia, which no prismatic combination tried by a local optician could relieve.

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Subsequent Diplopia.—I first saw the patient about four weeks after the injury. He came into my office wearing a black patch over the injured eye to prevent the diplopia, which was so annoying that, without exclusion of the right eye from vision, he was incapacitated for his daily duties.

The injured eye showed no signs of irritation; in fact, on first appearance it was apparently normal, but on closer inspection a faint conjunctival scar was seen, starting about 7 mm. below the cornea and to the nasal side of the insertion of the inferior rectus muscle, and extending in a straight line outward for about 2 cm. The field of rotation was not as much diminished as might have been expected, and the defect of motility seemed almost equally distributed. Compared with its sound fellow, the injured eye appeared slightly higher.

I endeavored to find a position of the head and eyes in which there might be fusion of the double images; and discovered that while sitting erect in a straight position facing a small circle of light about level with the eyes, by slightly lowering the chin, and rotating its point to the right, so that the head was inclined to the left at about an angle of 75 degrees, the patient had single binocular vision, that is, there was only one image of the light.

On moving the eyes downward from this point, there was immediate diplopia. The false image appeared lower and on the side of the uninjured eye—crossed diplopia—and the distance between the true and false images increased as the eyes were rotated further downward. When the eyes were directed downward and to the side of the injured eye, there was also an increase of the distance between the images. These findings were indicative of interference of depression and adduction of the right eye and pointed to injury of the inferior rectus muscle.

On rotating the eyes directly upward, the false image appeared higher on the side of the injured eye—homonymous diplopia—and the distance between the images increased as the eyes were further elevated. Still looking upward, and turning the eyes to the side of the uninjured eye there was also an increase of the diplopic separation. This suggested involvement of elevation and abduction of the right eye, and pointed to injury of the inferior oblique muscle.

Treatment.—The patient was quite anxious as to the advisability of operative treatment, which he had been told offered the best means of relief. I noticed that the slight exercise of muscles of the injured eye during the tests was causing an increase in the field of single binocular vision, and I instructed him to keep the blinder off the right eye until the next visit. By this time there was such diminution of the diplopia, that I was able to give him very satisfactory vision with a small amount of prismatic aid. Finally I urged a prolonged trial with a prismatic correction, thus exercising the disabled muscles, before proceeding to advancement. I corrected a small astigmatic defect, which brought vision up to 6/5 in each eye, and incorporated a 2 degree prism, base down, in the right lens, for distance use. This was very satisfactory so long as the eyes were not turned directly downward. For reading and other visual work at close range, I ordered a 4 degree prism, base down, incorporated in the right lens, and a 2.5 degree prism, base in, in the left lens, which also seemed quite satisfactory. After several weeks the patient complained of discomfort with the reading lenses. I wrote to him to try his distance lenses for close work, beginning with their use for short periods, and gradually increasing the length of time in reading with them. He was very soon able to dispense entirely with the reading glasses. Five months after the injury I saw him for the last time. The right eye appeared perfectly straight and level with its fellow. There was no diplopia except in looking directly downward. In the ordinary position of the eyes in reading, a 2 degree prism, base down, before the right eye, seemed to give perfect comfort. I ordered the full correction without any prismatic addition for distance and suggested a small presbyopic addition with a 2 degree prism, base down, right, in glasses for reading and other close work. Since then the patient has been quite comfortable, and except in reading often works without any glasses.

ANASTOMOSIS OF THE URETERS WITH THE INTESTINE.

A HISTORICAL AND EXPERIMENTAL RESEARCH.*

REUBEN PETERSON, M.D.

Professor of Gynecology Post-Graduate Medical School; Assistant Clinical Professor of Gynecology, Rush Medical College; President of the Chicago Gynecological Society.

CHICAGO.

(Continued from page 573.)

If the subsequent history of the successful cases be considered, the operation is placed in a still more unfavorable light. Of the twenty-two recovering, three died later of pyelonephritis and two of uremia after implantation of the second ureter. The post-mortem in one of these revealed a fibrous condition of the kidney whose ureter had been implanted fourteen months before. No autopsy was secured in the second case, but from the similarity of symptoms it is fair to assume that the pathologic conditions were the same as in the first case. In one case it is noted that the kidney was destroyed through stenosis of its ureteral orifice.

Of the eleven surviving cases, there are five with one and six with both ureters implanted. Two of these cases (those of Evans† and Winiwarter) must be excluded from further consideration, because each has a fistula, opening, the one case in the loin, the other in the perineum, and differing only in degree from other intestinal cutaneous fistulæ. Martin's first case, one of exstrophy of the bladder, showed renal infection after implantation of one ureter, as shown by casts in the collected urine. The attempt to implant the second ureter failed, and presumably the urine still escapes over the pubes. In Boari's case, surviving six months with one ureter in the rectum, it is not stated whether urine still passes by way of the anus. The same criticism may be raised in Tuffier's case, which survived two years, with no signs of renal infection. This leaves one case, that of Chaput, which has survived unilateral implantation eight years. Chaput reports (Boari, *l. c.*) that three years subsequent to the operation the presence of urine could be demonstrated in the liquid evacuations. In the communication to me he states that after eight years there are about three liquid evacuations in each twenty-four hours. Evidently the discharges have not been examined with a view of ascertaining the condition of the kidney under consideration.

In one of the remaining cases (Peters') it is stated that as far as can be judged the strained urine is normal both in quantity and percentage of urea. This case has survived ten months with both ureters in the rectum. As far as can be ascertained no such examinations have

* Read before the American Gynecological Society, Washington, D. C., May 1, 1900.

† Died later.

been made in the other cases, and we are left in doubt as to the condition of the kidneys.

The fact that a patient survives after the implantation of one ureter into the bowel should not be used as an argument in favor of the operation, since there remains one functioning kidney, which can very readily support life. The supreme test of the operation lies in bilateral implantation, and individual cases are valuable only after the lapse of considerable time from the date of the operation, since marked kidney disease may exist for a time without the appearance of grave symptoms.

Fowler's uretero-rectal anastomosis stands in a class by itself, and will be discussed in connection with my own experimental work.

Experimental and clinical observations led Tuffier, as early as 1890, to the conclusion that ascending renal infection after uretero-intestinal anastomosis could only be prevented by the preservation of the ureteral orifices. He suggested for exstrophy of the bladder the formation of a vesico-rectal fistula by an incision in the septum separating the rectum and bladder and the suturing of the vesical and rectal mucosa. Catheters were then to be introduced into the ureters and carried out through the anus by way of the fistulous opening. By dissection of the exstrophied bladder wall a new bladder, smaller in size, was to be formed over the fistulous opening. Frank's operation of vesico-rectal anastomosis, performed by means of his coupler, is practically the same operation by a new technique.

In 1894 Maydl reported two cases of exstrophy of the bladder operated upon by an original method, consisting of the implantation of the vesical trigonum with its ureteral orifices into the sigmoid flexure. The predominant idea of this operation was the preservation intact of the ureteral orifices and their utilization as a means of preventing an ascending renal infection.

In order to ascertain whether this theory is borne out by clinical facts, thirty-six operations performed according to the technique laid down by Maydl have been collected, tabulated, and summarized.

I have ventured to make use of the term "uretero-trigono-intestinal anastomosis" as descriptive of the operation of uniting the vesical trigonum with its ureteral orifices to the intestinal tract.

SUMMARY OF 36 CASES OF URETERO-TRIGONO-INTESTINAL ANASTOMOSIS.

Number of operations	36
Number of operators	16
Operation performed for exstrophy of the bladder	32
Epispadias without exstrophy	2
Exstrophy and adenoma of bladder	1
Incontinence caused by funnel-shaped urethra	1
Sex mentioned in	36
Males	30
Females	6
Age noted in	31
Average age	12 3-5
Oldest	35
Youngest	3
Recovery in	31
Number of deaths	5
Percentage of recoveries	86
Percentage of deaths	14
Deaths occurring four and fifteen months later of pyelonephritis	2
Mortality including these cases	19 per ct.
Implantation site mentioned in	35
Implanted in sigmoid	33
Implanted in rectum	2
Rectal drainage-tube used in	21
Sphincteric control over urine mentioned in	29
Referred to as satisfactory in	24
Occasional involuntary evacuations at night in	4
Sphincteric control referred to as poor in	1
Average frequency of evacuations	every 4-5 hours.
Lumbar pains after operation, usually transitory, noted in	5
Fistulæ after operation	6
Number of cases living and well at end of 1 year	19
Number of cases living and well at end of 2 years	10
Number of cases living and well at end of 3 years	7
Number of cases living and well at end of 4 years	4
Number of cases living and well at end of 6 years	1
Number of cases living and well at end of 7 years	1

The mortality in the thirty-six operations is surprisingly low when it is considered that it is a difficult major operation, and that the list includes the first cases operated upon before the technique had been perfected.

When we compare this mortality with the 33 per cent. mortality accompanying ureteral implantation without the preservation of the ureteral orifices, we are forced to conclude that the explanation lies in the intrinsic dangers of the latter operation rather than a lack of skill on the part of the operators. Without the vesical ureteral orifice eleven deaths in thirty-three cases from rapidly progressive renal infection; with the ureteral orifices intact, five deaths out of thirty-six cases; two, at least, not being due to infection. Unfortunately, we have no detailed description of the causes of death in v. Eiselberg's three fatal cases, except that two died after one and five days.

Only two cases have died from ascending infection, and one of these (Schnitzler) was operated upon extraperitoneally and not according to the technique laid down by Maydl.

Since the operation is applicable chiefly to cases of exstrophy of the bladder, and the majority of cases of this anomaly occurs in males, one would expect the proportion found, of thirty males to six females.

The sphincteric control over the urine is remarkably good, it being reported as poor only in one case.

The six fistulæ resulted, in some of the cases at least, from timidity on the part of the operator to trust to his suturing and to the employment of gauze drainage. They are all reported as eventually closing.

The noting in five cases of gradually disappearing lumbar pains would suggest a possible renal infection from which the patient slowly recovered. It may be more than a coincidence that in one of these cases (Herzel) where lumbar pain was noted, there was subsequent polyuria, a condition nearly always present in chronic interstitial nephritis. However this may be, the number of cases (ten) living and without apparent signs of renal infection, after the lapse of two years shows that renal infection, if present, can not be very severe.

The primary and secondary results of uretero-trigono-intestinal anastomosis are so much superior to those of ureteral implantation without the preservation of the vesical ureteral orifices as to demand always the performance of the first operation in preference to the latter.

In order to cover the entire field of uretero-intestinal anastomosis it only remains to consider the cases where union has to be attained by the formation of fistulæ between the bladder and rectum.

This was first attempted by Loyd in 1851.

LLOYD,[74] 1851. *Exstrophy of bladder; formation of vesico-rectal fistula; death on the sixth day from peritonitis.* October 3, 1851, Loyd operated upon a male, aged thirty years, for exstrophy of the bladder and separation of the os pubis and epispadias. A skein of thread was passed through bladder and rectum and out of anus. Although the silk was removed on the sixth day the patient died soon after of peritonitis. At the autopsy it was found that the thread had passed through the peritoneum, which in this case was reflected low down in the pelvis.

JOHNSON,[75] 1852. *Exstrophy of the bladder; vesico-rectal anastomosis; death from peritonitis.* Johnson performed vesico-rectal anastomosis by Loyd's method on an infant suffering from exstrophy of the bladder. Death resulted in a short time from peritonitis.

HOLMES,[71] 1863. *Exstrophy of the bladder; vesico-rectal fistula by means of pressure necrosis; failure.* Holmes, in a boy with exstrophy of the bladder, endeavored to establish a free communication between the bladder and rectum by special

TABULATED LIST OF THIRTY-SIX CASES OF URETERO-TRIGONO-INTESTINAL ANASTOMOSIS (MAYDL'S OPERATION).

No.	Date.	Operator.	Conditions Demanding Operation.	Sex and Age.	Operative Result.	Site of Anastomosis.	Rectal Drainage Tube.	Sphincteric Control.	Remarks.
1	Nov. 3, 1898.	Allen, D. P. (51)	Exstrophy of bladder.	M., 15	Recovery.	Sigmoid.	Yes.	April 6, 1900, retains his evanuations from 5 to 7 hours.	Personal communication from Dr. Allen. April 6, 1900. Patient occupies position as dry-goods clerk.
2	 1894	Bergenhem, B. (52)	Exstrophy and adenoma of bladder.	M., 35	Recov.	Rectum..	"	1¼ years after operation evacuations are every 5 to 6 hr. during the day; twice at night	Attends regularly to business and appears to be in good health.
3	Feb. 24, 1896.	v. Eiselsberg, A. (53)	Exstrophy. . .	M., 31	"	Sigmoid.	"	3 months after operation retains urine 6 to 7 hours; 3 years afterward perfectly continent.	Twelve days after operation slight infiltration of urine through incision; completely disappeared 6 days later; transitory pains in lumbar region. Well Jan. 25, 1899.
4	July 30, 1896.	v. Eiselsberg, A. (53)	" " . .	M., 8	"	" "	"	2½ years after operation soils the bed at night, but is continent during the day.	No pain in lumbar regions; abdominal fistula shortly after operation, discharging urine and feces; soon closed. Well April 3, 1900.
5	July 18, 1898.	v. Eiselsberg, A. (53)	Epispadias. . .	M., 6	"	" "		6 months after opera. sphincter control good.	Epispadias had resisted all other modes of treatment. Well Nov. 1, 1898.
6	Nov. 11, 1898.	v. Eiselsberg, A. (53)	Exstrophy. . .	M., 12	"	" "		. . . . .	Well April 3, 1900.
7	Nov. 11, 1898.	v. Eiselsberg, A. (53)	" " . .	M., 8	Death.	" "		. . . . .	Died in five days.
8	June 14, 1898.	v. Eiselsberg, A. (53)	" " . .	M., 6	"	" "		. . . . .	Died next day.
9	Oct. 19, 1898..	v. Eiselsberg, A. (53)	Incontinence due to funnel-shap'd urethra	F., 11	"	" "		. . . . .	Died Nov. 11, 1898.
10	Sept. 14, 1896.	Ewald, Carl (54)	Exstrophy. . .	M., 5	Recov..	" "	No. .	Urine passed involuntarily for a few days only; 2 years afterward evacuations every two hours during day; sleeps 10 hours at night.	No infectious renal symptoms two years after operation. No casts, 1900.
11	 1898	Ewald, Carl (54)	Epispadias. . .	M., 3	"	" "		Some incontinence while patient was in bed; function reestablished when he began to walk about.	
12	June 28, 1898.	Frank, Rudolf (55)	Exstrophy. . .	M., 16	"	" "	Yes. .	2 months after operation once in 5 hours; sleeps the whole night.	For two or three days bloody urine.
13	Oct. 31, 1898..	Frank, Rudolf (55)	" " . .	M., 16	"	" "	" .	3 to 5 hours during day; 2 to 3 times at night.	For a month leakage of urine through abdominal incision. Well Jan. 12, 1900.
14	May 25, 1897..	Herczel, Emil (56)	" " . .	M., 5	"	" "	" .	2½ years after operation 6 to 7 hours; oftener at night.	One month after operation polyuria which lasted four months; shortly after operation had an attack of pneumonia, during which he suffered pain in lumbar regions; 2¼ years after operation polyuria still exists.
15	Dec. 20, 1897.	Herczel, Emil (56)	" " .	M., 25	"	" "	" .	6 months after operation every three hours, but sometimes involuntarily at night.	
16	Mar. 9, 1899.	Herczel, Emil (56)	" " .	M., 11	"	" "	" .	1 month after operation 5 to 6 hours; involuntarily at night.	
17	Apr. 23, 1895..	Kryński, L. (57)	" " . .	M., 24	"	. . .	. .	Continence could be more satisfactory.	
18	June 19, 1892.	Maydl, K. (58)	" " . .	M., 20	"	Sigmoid	" .	Good control; able to work.	Pain in lumbar regions; urine bloody for few days. Living in 1899
19	Oct. 1, 1893...	Maydl, K. (58)	" " . .	F., 12	"	" "	" .	Every three hours and the entire night.	Leakage of urine for short time through the abdominal incision; no renal infection. Living in 1899.
20	Jan. 2, 1895 .	Maydl, K. (59)	" " . .	M., 7	Death..	" "	"	. . . . .	Died next day of shock.
21	Jan. 20, 1895.	Maydl, K. (59)	" " . .	F., 22	Recov..	" "	" .	2 weeks after operation every 7 hours.	Pain in lumbar region. Well in 1899.
22	Nov. 23, 1895.	Maydl, K. (59)	" " . .	F., 7	"	" "	" .	6 mo after operation every 4 hr.	No trace of renal infection. Well in 1899.
23	July 2, 1897.	Maydl, K. (60)	" " . .	M., 4	"	" "	" .	3 wk. after opera. every 4 to 5 hr	No signs of renal infection. Well in 1899.
24	Nov. 29, 1897.	Maydl, K. (60)	" " . .	M., 7	"	" "	" .	Satisfactorily.	Abdominal urinary fistula which closed later. Well in 1899.
25	Mar. 24, 1898.	Maydl, K. (60)	" " . .	M., 14	"	" "	" .	3 to 4 hours in daytime; once at night.	One month after operation examination of urine shows no albumin. Well in 1899.
26	June 20, 1898.	Maydl, K. (60)	" " . .	M., 7	"	" "	" .	Satisfactory.	Well in 1899.
27	Nov. 20, 1898.	Maydl, K. (60)	" " . .	M. 4½	"	" "	" .	1 month after operation 5 to 6 hours.	Well in 1899.
28	 1895	Mikulicz, T. (61)	" "	M., 28	"	Rectum .	. .	Very unsatisfactory.	Death 4 mos. later from pyelonephritis.
29	Feb. 24, 1899	Nové Josserand, G. (62)	" " . .	M., 5	"	Sigmoid	No. .	At first incontinence; 1¼ mos after operation, 6 to 10 evacuations in 24 hours.	No sign of any renal infection. Doing well May 17, 1899
30	March, 1897.	Park, R. (63)	Exstrophy and other congenital defects.	M., 4	Death..	" "	"	. . . . .	Died 55 hrs. after operation; could not be nourished per rectum because of congenital defect; no sign of peritonitis.
31	 1896	Rosegotti. (64)	Exstrophy. .	M., 9	Recov..	" "	" .	3 months after operation evacuations are 6 to 8 times in 24 hours.	
32	Jan. 27, 1895..	Schintzler. (65)	" " . .	M., 25	"	Rectum..	No. .	. . . . .	Rectal fistula followed operation; 1¼ yr. after first operation patient died from effects of plastic operation to close defect. Post mortem showed well-advanced pyelitis.
33	 1896	Trombetta. (66)	" " . .	M., 10	"	Sigmoid	. .	2 to 3 hours in daytime; 3 to 4 times at night.	
34	Feb. 12, 1898	Tuffier, T. (67)	" " . .	M., 15	"	" "	No. .	4 months after operation 5 to 6 passages in 24 hours.	No signs of intestinal inflammation.
35	Dec. 26, 1895.	Wolffer. (68)	" " . .	F., 9	"	" "	Yes.	After 6 weeks can retain her urine 6 hours; 1½ years after operation 5 to 6 times in 24 times; occasionally soils bed in sleep.	1½ years after operation no signs of renal infection.
36	Jan. 16, 1897..	Wolffer. (68)	" " . .	F., 8	"	" "	" .	1½ years after operation every 2 to 3 hours; once at night.	Well 1½ years after operation.

screw forceps, which, placed in the rectum and bladder, destroyed the intervening tissue by pressure necrosis. The attempt failed, for although the urine passed into the bowel in considerable quantities, a good portion of it still continued to escape above the pubis. So much pain was produced that the rectal opening was allowed to close.

ROSE,[71] 1872. *Vesico-vaginal fistula transformed into a vesico-vagino-rectal fistula; death from uremia ten months after operation.* Rose operated upon a woman whose vesico-vaginal septum had been almost destroyed by diphtheritic ulceration. He made a fistula opening 2 cm. above the anus and about 2 cm. in width in the recto-vaginal septum, and prevented contraction by suturing the mucous surfaces of rectum and vagina. The edges of the freshened surfaces of the labia were sewed

together and the vagina closed. The patient was able to control the liquid stools, which she passed per anum every two or three hours. She died ten months after the operation from uremia, the nephritis having its origin in the previous attack of diphtheria. The vagina, bladder, and rectum were found perfectly normal.

KEEN,[77] 1875. *Vesico-vagino-rectal fistula following typhoid fever; closure of introitus; well twenty-two years afterward.* A woman aged thirty-four, had been left with a vesico-vagino-rectal fistula from severe sloughing after typhoid fever. After a number of unsuccessful plastic operations for the closure of the fistulæ the entire vulvar aperture was closed. The patient defecated, menstruated, and micturated entirely by the rectum. Micturition occurred only five or six times during the day and once or twice at night. The feces did not pass into the bladder. Eleven years subsequent to the operation a calculus was removed from the vagina, with recovery in three or four days. With the exception of the formation of a small fistula, which closed spontaneously, the subsequent history of the patient was entirely satisfactory. Twenty-two years after the operation she remained in perfect health, with no sign of renal infection.

THIERSCH,[78] 1881. *Exstrophy of the bladder; formation of recto-vesical fistula; well after eight months.* The patient was a child with a severe exstrophy of the bladder, together with a defective vagina and a bicornate uterus. A communication was made between a newly formed bladder and the rectum through repeated applications of a Samson's bowel-clamp, which produced a necrosis of the recto-vesical septum. The patient recovered, and although she had been passing all the urine per rectum for eight months at the time the case was reported, there was no rectal irritation or excoriation of the parts near the anus. The bladder remained clear of feces.

NOVARO,[75] 1890. *Exstrophy of the bladder; formation of a vesico-rectal fistula and new bladder; recovery; operation a failure.* Novaro, in a girl, aged three, suffering from exstrophy of the bladder, exposed the anterior wall of the rectum by a semilunar incision at the inferior border of the vaginal orifice. By a plastic operation he united the dissected wall of the bladder to the rectum, which had previously been opened 12 to 15 cm. The raw surface of the bladder was covered in by the freshened labia majora. The edges of the flap sloughed and allowed the urine to escape over the pubes. At the time of the report Novaro intended to form a cloaca by a supplementary plastic operation.

TUFFIER,[79] 1891. *Formation of recto-vesical fistula; partial success.* Tuffier established an artificial recto-vesical fistula with partial success, a fissure remaining which he intended to close later. The patient remained well. The urine passed by way of the rectum, could be held ten minutes.

In the 1899 edition of Duplay and Reclus, Tuffier, while mentioning the technique, does not report the case or give its subsequent history.

RESEGOTTI,[76] 1895. *Exstrophy of the bladder; formation of vesico-vagino-rectal fistula and closure of introitus; death from pyonephrosis.* By a plastic operation in a case of exstrophy of the bladder, Resegotti formed a bladder out of the abdominal wall and the labia majora and minora. An artificial vesico-vagino-rectal fistula was then made and the introitus closed. Complete continence ensued, the urine being passed voluntarily per anum every two or three hours. Double pyonephrosis soon developed, from which the patient died. Resegotti condemns the formation of communications between the intestine and the urinary tract.

GALLET,[80] 1896. *Formation of recto-vaginal fistula and closure of introitus; success.* A case is briefly mentioned by Gallet where, for a vesico-vaginal fistula, he closed the vagina and made an opening in the vagino-rectal septum. The patient did well and was able to control the urine two hours.

HALSTEAD,[70] 1900. *Exstrophy of the bladder; vesico-rectal anastomosis with the Frank coupler; death from shock.* Through the kindness of the operator, I am permitted to report the following unpublished case:

The patient was a boy aged 5 years, suffering from exstrophy of the bladder and other congenital defects. Jan. 9, 1900, the abdominal cavity was opened and the sigmoid attached to the serous surface of the posterior aspect of the ectopic bladder wall by sero-serous quilted sutures. The bladder-wall was next incised 1.75 cm. in a longitudinal direction just above the ureteral openings, and one-half of a Frank coupler introduced. The other half of the coupler was inserted into a longitudinal incision in the sigmoid. The adjacent edges were united by a series of quilted sutures. By a plastic operation a new bladder was formed over the coupler and the defect in the abdominal wall nearly closed. Child urinated several times during night through rectum. Died at the end of sixteen hours of shock. The post-mortem showed no evidences of peritonitis. No escape of urine through sutured bladder-wall. Rectum contained nearly one ounce of urine. Right heart dilated.

It is unjust to include the cases of Loyd, Johnson, and Holmes in any consideration of vesico-rectal anastomosis as a treatment for exstrophy of the bladder, since the methods employed were exceptionally crude. The same may be said of Thiersch's case, although the patient was well at the end of eight months.

Halstead's case, where Frank's technique was employed, demonstrates the operation to be perfectly applicable to human beings. Frank's interesting experiments have shown that in dogs vesico-rectal anastomosis is a comparatively safe procedure; that the bladder remains free of feces, and that infection of the kidneys does not result in some of the cases operated upon. These findings are confirmed by the results of my own experimental work, which show that whenever the ureteral orifice is left intact, for a certain time there may be freedom from infection, even where that orifice continually comes in contact with virulent micro-organisms.

Of the five dogs reported on by Frank, the first three were examined fifteen, four and sixteen days respectively after the operation. The first two showed signs of renal infection, but the third showed two small foci of round-celled infiltration. The other two dogs were killed and examined twenty-seven and ninety-one days after the operation. In both cases there were unmistakable evidences of ascending renal infection. In other words, the longer time elapsing after the operation the more changes resulted in the kidneys.

How great this infection will be and to what extent the animal can overcome its infection can only be shown by allowing the animals to live a longer time before making the examinations. This Frank promises to do, and the results will be watched with great interest. The burden of proof, however, remains with him to show that renal infection after his operation is impossible or at least rare. Until such proof be forthcoming Frank's prediction that vesico-rectal anastomosis will become more popular than gastro-enterostomy will hardly be fulfilled. The question of infection must be definitely settled before other virulent micro-organisms are given admittance to a bladder already handicapped by disease.

(To be continued.)

Clinical Reports.

ACUTE TEMPORARY DILATATION OF THE HEART ACCOMPANYING THERMIC FEVER.

REPORT OF TWO CASES.

C. F. CLOSE, M.D.

CHICAGO.

Acute dilatation of the heart has been described as occurring under various conditions, chiefly as a result of excessive physical exertion. So far I have found no report of a case in connection with sunstroke or heat-stroke—*Hitzschlag*, as the Germans more exactly express it. The following two cases occurred during the excessively hot weather of the past summer.

Case 1.—A male, aged 17, born in America, of Danish parentage, and a photographer's assistant, had always been healthy. There was no constitutional disease in the family. The patient's occupation compelled him to work under a partially unprotected skylight the greater part of the day, where the heat was very intense. I was summoned soon after the attack of sunstroke, and found him suffering with the usual symptoms:

high temperature; rapid, feeble pulse; headache and dizziness; marked congestion of the vessels of the head and neck. He did not lose consciousness. The heart was found to be greatly enlarged in all its dimensions, but especially to the right, reaching to the right border of the sternum. The pulsations were very noticeable in the epigastrium just below the arch of the ribs. The sounds were very low and somewhat indistinct. A mild systolic murmur was heard over the tricuspidal valves. Under the ordinary treatment—recumbent position with elevation of and ice compresses to the head; cathartics, etc.—he recovered rapidly, and ten days afterward the heart had subsided to its usual, normal, boundaries.

Case 2.—A female, aged 23, unmarried, an American of German parentage, worked as teacher for a sewing-machine company, her business being to go from house to house where machines had been sold, and instruct the inmates in their use. This necessitated her being out the greater part of the day. During one of these trips she was overcome, on the street, by the heat and lost consciousness. When I arrived she complained of great dizziness, pain in the head, and was somewhat dyspneic. She presented practically the same symptoms as the preceding patient, and had been under my care some time before for catarrhal bronchitis, etc., so I was quite familiar with her condition, and the result of the examination of the heart was a great surprise to me. Formerly it had been absolutely normal, but now I found the dulness increased in all directions, but chiefly to the right as before, reaching slightly beyond the middle of the sternum. The sounds were somewhat muffled, but no murmurs. The pulse was rapid, and of low tension. As before, the patient recovered gradually, though not so rapidly. In two weeks the heart had gone back to its former dimensions, and aside from some dizziness and sensitiveness to the sun, she was as well as ever.

I have been able to keep both of these patients under observation since the attacks, and neither has shown any symptoms of "weak heart" since, nor had they before. Both are actively employed at work which throws some strain on the heart. I am inclined to believe that the cause of this acute dilatation may be looked for in the nervous system, and that it is a part of the general muscular relaxation the result of profound shock. Added to this we have a general venous congestion which especially overtaxed the right ventricle.

4707 Evans Avenue.

RUPTURE OF THE MEMBRANA TYMPANI FROM INDIRECT VIOLENCE.

WITH CONCUSSION OF THE LABYRINTH AND COMPLETE DEAFNESS.

RICHMOND McKINNEY, M.D.

LARYNGOLOGIST TO THE EAST END DISPENSARY.

MEMPHIS, TENN.

On Oct. 29, 1900, there came to my service at the East End Dispensary, a negro man, aged 23, with the following history: At two o'clock in the afternoon of October 28, a man had slipped up behind him and struck him a heavy blow on the right side of the head with a wagon-wheel spoke. For at least a half hour following this he lay senseless, and when he came to and arose to his feet he felt, as he described it, "foolish." Blood was flowing from his right ear and likewise from his mouth. This discharge of blood continued at intervals for some time. The evening of that day he had, as he judged from his sensations, a high temperature.

When I saw the patient on the afternoon of the day following, I found the drum membrane of the right ear to be in this condition: The entire membrane, with the exception of the membrana flaccida, was congested, it being especially red along the lower border, this probably being due to blood stasis in this portion of the membrane. The handle of the malleus was even more congested than the surrounding membrane. In the posterior half of the membrane was a perforation running for almost two-thirds of its diameter. This perforation was not gaping, and was perfectly straight. Bone and air conduction were both entirely absent, the patient being completely deaf in this ear. There was no tinnitus. I append a drawing of the injured membrane.

After cleansing the ear, I inserted a strip of iodoform gauze, and instructed the patient to go home, remain quiet, and return the next day.

The following morning he again presented himself, and stated that the night before he had again experienced the sensation of high temperature, and continued to spit blood. After cleansing the ear I found that the discharge of blood from the wounded membrana had ceased. There was still, however, total inability to hear in this ear. The patient desired to go to work, but was instructed to return home and to refrain from any unnecessary physical exertion.

When next seen, on November 2, the perforation in the drum had entirely healed. Deafness was as marked as ever. He at intervals had continued to spit blood.

At this writing—November 20—the patient has returned to work with a practically perfect drum, but is still stone deaf in the affected ear. The expectoration of blood has wholly ceased.

Although cases of traumatic perforation of the membrana tympani from both direct and indirect violence are not of great rarity, still there are some features of this case which render it of more than passing interest.

As one of these, may be mentioned the continued expectoration of blood, and high temperature, which

might lead one to believe that in this case there was a fracture of the base of the skull. The manner and force with which the blow causing the injury was used would also lead to the opinion of a graver lesion. But this has been excluded, I should think, by the subsequent history of the case. Another interesting feature is the evident concussion of the labyrinth, with marked and permanent deafness following. But the most unusual and peculiar feature to me in this case was the fact that the rupture of the drum occurred in transverse relationship to the fibers of the membrana, and was perfectly straight and not oval and gaping as usually is the case in lesions of this membrane from indirect violence.

It is unfortunate, as concerns the hearing, that the therapeutic resources of the aurist do not permit him to close his reports of such cases as this with the gratifying words *restitutio ad normalem*.

Lyceum Building.

Intrarectal Urethra for Exstrophy of the Bladder.—Soubbotin, of St. Petersburg, has cured a case of exstrophy of the bladder by a method described, in the *Semaine Méd.* of January 23, as extremely satisfactory in the one case in which he has had occasion to use it. Through a Kraske posterior incision the rectum is isolated from the side and two longitudinal incisions made in it. The fundus of the bladder is manipulated so as to bring the ostium of the urethra into one of these slits, where it is sutured. Two longitudinal incisions are then made below this point to the anus, and the edges of the flap thus obtained are sutured together above, thus providing a tube running from the urethral sphincter to the anus—an intrarectal urethra with its own sphincter and the anus intact below.

EXSTROPHY OF THE BLADDER.

F. GREGORY CONNELL, M.D.

ADJUNCT PROFESSOR OF SURGERY, COLLEGE OF PHYSICIANS AND SURGEONS, MEDICAL DEPARTMENT, UNIVERSITY OF ILLINOIS.

CHICAGO.

[*Awarded Senn Medal at the Fifty-First Annual Meeting of the American Medical Association, June 6, 1900. Received by the Committee, March, 1, 1900.*]

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EMBRYOLOGY.

Before considering a congenital deformity of the bladder, it will be advisable to review briefly the embryological development of the genito-urinary system, and, of necessity, the embryo as a whole.

The ovum, a single cell with a single nucleus, soon after impregnation becomes, by karyokinesis, a mass of cells resembling in shape and appearance a mulberry, hence the name, morula. A clear fluid next accumulates in the center of this mass of cells; at first small, but gradually increasing in amount. Thus, the morula is converted into a globular vesicle, termed the blastodermic vesicle, the wall of which is at first composed of a single layer of cells—ectodermal, but later, a second layer of cells—entodermal—is completed. This double layer of cells is termed the blastoderm.

The first result of the segmentation of the ovum is the formation of the blastoderm and the disposition of its cells into the embryonic layers. At this time is seen the development of the area germinativa or embryonal area, by the accumulation of cells at a limited point on the inner surface of the blastodermic membrane. It is from this area alone that the body of the embryo is developed. The remainder of the germ forms what is termed the extra-embryonic structures, such as amnion, chorion, and yolk sac. In this germinal area there is seen an opaque line called the primitive streak. In the streak develops a groove, the primitive groove, bordered by two ridges, which will become dorsal plates, and, ultimately uniting, inclose a cylindrical space, the tubus medullaris, or the nervous system.

On cross-section, at this point, there will be seen a marked accumulation of cells between the ectoderm and entoderm, most noticeable on each side of the anterior extremity of the primitive streak. This is the third germ layer, the mesoderm.

The mesoderm at an early stage consists of four parts, two on each side: one near the medial line called the paraxial mesoderm—primitive segmental or vertebral plate—and a lateral plate on each side. The paraxial mesoderm undergoes transverse division into cubical masses, called mesoblastic somites or primitive segments. The lateral mesoderm splits into two layers: 1, outer-parietal or somatic mesoderm; and 2, inner-visceral or splanchnic mesoderm. The somatic mesoderm uniting with the ectoderm is called the somatopleure. The splanchnic mesoderm uniting with the entoderm is called the splanchnopleure.

The cavity existing between the splanchnopleure and the somatopleure is the celum, body-cavity, or pleuro-peritoneal cavity, which will ultimately become subdivided into the great serous cavities of the body—pericardial, pleural and peritoneal. The germ, or germinal area, at this stage of its development, has the shape of a hollow sphere or vesicle. The differentiation of its cells into epiblast, endoblast, and mesoblast, has taken place. The foundation for every structure of the body is well under way and in tangible shape. The further growth and development consists chiefly in an unequal growth of the different parts; in evaginations and invaginations; the furrowing and constricting off, of certain areas.

In considering the further history of the development of the embryo, the mesoblast alone will be considered, excluding the other structures, because of their lack of close connection with the subject. The primitive segments are intimately associated with the development of the spinal column and muscles of the back; hence they will not be included in this review. The lateral plates have split into the somatopleure and splanchnopleure, between which is the celum or body cavity. The future development of these two structures is of paramount importance in an effort to arrive at a thorough understanding of exstrophy of the bladder.

In the earliest stage, the embryo lies flat on the surface of the yolk, as a watch-glass, and is not distinctly differentiated from the adjacent blastoderm. The cavity of the germ is one undivided space. But there soon appears the head-fold and tail-fold, and likewise similar lateral folds as if by an invisible constricting band which was gradually drawn tight until the large single cavity of germ has been divided into two spaces of unequal size. The smaller, or intra-embryonal portion formed the gut-tract, and the larger, or extra-abdominal division constituted the umbilical or vitelline vesicle, or yolk-sac, these two cavities uniting at a point which

is to become the umbilicus and communicating by means of a short canal, the vitelline or omphalo-mesenteric duct. These lateral downward folds of blastoderm are called visceral plates, and consist of the splanchnopleure internal and somatopleure external. The splanchnopleure descends from each side, meets in median line and, coalescing, it pinches off a portion of the yolk-sac, which is to become the gut-tract and is enclosed in the body cavity by the descending and coalescing walls of somatopleure. Hence the splanchnopleuric fold outlines and forms the intestinal canal. The somatopleuric layer, which accompanies or rather follows the splanchnopleure, constitutes the lateral and ventral body wall of the embryo, by fusion in the median line, except, of course, at the umbilicus. Failure of these somatopleuric folds to unite in the median line is the cause of various deformities, not the most infrequent of which is exstrophy of the bladder.

The allantois must be considered, as it is from this embryological structure that the bladder is formed. It is an evagination of the splanchnopleure, the gut-tract, the same as is the pancreas, liver and lungs. It sprouts from the hind gut, at about the same time that the amnion is being developed; it is, at first, solid and pear-shaped, but soon becomes vascular and membranous. It projects from the body, through the imperfectly closed anterior abdominal wall, into the cavity of the amnion and into contact with the false amnion, where, by uniting with the vascular system of the mother, the placenta is developed.

Bischoff, Reichert, Remak and others, claim that the allantois is of double origin, arising as two separate and distinct columns of cells, either solid or hollow, from the neighborhood of the Wolffian body, and soon coalescing. This order of events has been observed in some of the lower animals, but not in man. A human embryo of three weeks has been described, with a perfect single allantois. The allantois is the chief agent of the early circulation; it contains two arteries and two veins. The arteries are, at first, branches of the abdominal aorta, but subsequently, when the primary aortæ coalesce, they become branches of the hypogastric arteries.

In the mammals, the extra-embryonic portion of allantois contains no cavity. At about the third month it is no longer of use and its extra-embryonal portion becomes the umbilical cord, its vessels becoming umbilical vessels.

Its intra-embryonic portion is divided into three subdivisions: 1. The upper, the urachus, at birth is an atrophied cord extending from fundus of bladder to umbilicus. 2. The middle third becomes the urinary bladder. 3. The lower third becomes, in males, the first part of urethra; in females, the entire urethra. The proximal portion of the allantois, that is, the part intervening between bladder and intestine, is designated as the "sinus urogenitalis," while the caudal end of intestine, which is in effect a pouch in which both allantois and intestine terminate, is known as the "cloaca."

During the sixth week there appears on the surface of body, in the region corresponding to position of the cloaca, the cloacal depression, or proctodeum, which extends upward, forming the communication between gut—entoderm—and skin—ectoderm.

In amphibia, reptiles and birds, also in the lowest mammals, the monotremata, the cloaca is a permanent structure. In all mammals, except the monotremata, the cloaca undergoes division into a posterior or anal canal and an anterior or urogenital aperture, opening independently on surface of body; the latter in the female is the short urethra and fossa of vestibule, and in the male is the prostatic portion of urethra. This division is brought about by three folds, one from each side and one from the point of union of urogenital sinus and intestine. These folds coalesce about the tenth week and at the time of birth constitute the perineum.

The embryology of the ureters must also be considered, not only because of their intimate relationship to the bladder, but also on account of their participation in the most modern methods of treating deformities and certain diseases of the bladder. The ureters spring from the lower end of the Wolffian duct, as an evagination or budding, just before it enters the cloaca. The Wolffian duct is the first trace of the urinogenital apparatus to appear in the embryo. At first, it is a longitudinal column of cells, situated between the vertebral plates and the lateral plates and soon becomes hollow, its hind end uniting with and opening into the cloaca. Its upper end is connected with the pronephron and mesonephron, and is not open. Both of these organs, in mammals, disappear before birth, and the Wolffian duct becomes, in males, the vas deferens, and in females, a remnant known as Gärtner's ducts. The ureter springs as a bud from the Wolffian duct, ascends through a mass of mesoblastic tissue, called metanephric blastema, to the metanephron, or permanent kidney. Here, collecting-tubules from the ureter grow out and become continuous with masses of cells of the metanephric blastema, which then differentiate themselves into kidney tubules. At first, the ureter and Wolffian duct communicate by a common opening, with the intestine, so forming a cloaca, but this state of things lasts for a short time only. Owing to alterations brought about by processes of unequal growth the orifices of the ureters subsequently change their position, so as to open separately into the urogenital sinus, and still later by the further operation of the same agency, they come to open into the bladder, on its dorsal wall, thus gradually assuming their permanent location.

This cloacal stage of the development of the excretory apparatus has its counterpart as a permanent and normal structure in some of the lower animals. It has been held as a general principle that the higher animals, in the course of their embryological development, repeat, to a greater or less extent, the form of the lower mem-

bers of the class to which they belong. This principle is well brought out by Gadow, in his work on "The Cloaca and Copulatory Organs of the Amniota." He describes in detail these organs in the crocodilia, sauria, ophidia, aves, chelonia, monotremata, marsupialia and placentalia. He shows the gradual tendency toward the separate openings: one for the fecal current, and another for the genito-urinary secretion, as is found in man. It will be seen from his work that the natural cloaca is quite different from the artificial cloaca, as made by surgeons after implanting the ureters into the rectum.

In the animals in which it exists naturally the cloaca is subdivided into three compartments: 1, proctodeum, or external portion; 2, urodeum, or middle portion, urogenital; and 3, coprodeum, or inner portion, the fecal pouch. The middle segment, urodeum, is separated from the division above and below by folds of mucous membrane which do certainly serve as more or less of a protection. The ureters open at the summit of a papilla, and in many instances there exists a receptacle similar to a bladder, which communicates with the rectum. From this it will be seen that the kidneys are protected much more perfectly in these cases than are the same structures in man when the ureters are made to communicate artificially with the rectum. Then also, the consideration of the normal cloaca may evolve a solution of the question: "As some of the lower animals, and birds, have the bladder and rectum in one cloaca, why can not human beings live comfortably in the same condition?"

In attempting to answer this question, there are many explanations which might be advanced, all of which are lacking in the one essential, that of being conclusive. The urine of these animals might be antiseptic. The feces of these animals might be sterile or non-infectious. But that such is not the case has been demonstrated conclusively. Or, it might be said that, owing to the traumatism accompanying the implantation of the ureters into the rectum, the manufacturing of a cloaca, a *locus minoris resistentiæ* is established, which renders the danger of infection of these parts more likely to occur—a condition that is never present in a natural cloaca.

Van Hook answers this question, and says: 1. The urine of birds is very slightly moist; hence it can not mechanically carry bacteria to the kidneys, as is the case with fluids. This point is not of practical importance, as micro-organisms extend into solid as well as liquid media. Also, infection has not followed in animals with a natural cloaca where the urine is liquid. 2. Birds' ureters are supplied with mucous membrane, evolutionarily accustomed, as it were, to contact with infected solids and fluids. This seems to be the only rational explanation, and it also explains the fact that the liver, pancreas, salivary glands, the middle ear and Bartholin glands do not, as a rule, become infected from the more or less septic canal into which they open.

MALFORMATIONS.

Those organs which are placed in the median line of the body are more subject than the extremities to certain deviations from the normal development. The structures which have a more complicated mechanism and those which are formed latest in the stage of development of the embryo, are naturally more apt to be interfered with than those the formation of which is more simple and earlier in the history of the fetus. The bladder is formed late, and owing to its position in the median line—this being formed by the fusing of the visceral plates, which are comparatively complicated and also late in development—is frequently the seat of defective development, causing various malformations, some of which are consistent, and some inconsistent with life, some remediable by surgical means, and some not. A failure to complete the anterior wall of the trunk is not an uncommon defect, as is seen in cases of thoraco-gastro-schesis, thoraco-schesis, and gastro-schesis or fissura abdominalis. The latter is seen in different varieties: 1, extending the entire length of linea alba; 2, congenital hernia funis, at umbilicus; 3, closed at umbilicus, defect above; 4, closed at umbilicus, defect below. As a rule, Class 4 is associated with exstrophy of the bladder. The most common deformity of the bladder is

1. Exstrophy of bladder. Other malformations are:

2. Absence of bladder. When this exists it is almost universally associated with absence or imperfections of other important organs or structures, rendering life an impossibility. The condition is extremely rare, the organ usually being represented by a small overlooked pouch or rudiment. One interesting case is recorded by Fleury, in which the ureters opened directly into the urethra, and the girl lived to the age of 16 or 17 years. A post-mortem was held and no trace of a bladder could be found. Benninger reports a similar case. Bonn records a case in a new-born child in which kidneys, ureters and bladder were absent. Gross reports a case of marked arrested development in which the ureters ended in the gut near its termination, with imperforate anus, and the large bowel absent. A similar case was noted by Meyer. Under this heading might be included the peculiar case of Richardson; and, according to Chance, a case resembling Richardson's has been observed by Camper. Wytterhoeven reports a case of atrophy which was mistaken for absence. There existed a uretero-vaginal fistula for thirty years, causing the shrinking of the bladder to the size of a pea.

3. The opposite condition, that of multiple or supernumerary bladder. This is likewise one of exceedingly rare occurrence. Before we diagnose a multiple bladder, each bladder must be found to have its separate ureter, and all coats demonstrated. Many of the so-called multiple bladders are in reality merely sacculations or herniæ of the bladder. The following have been reported: Blasius found a double bladder; A. P. Smith, double bladder; Scibelli, triple bladder; Molenette, five-

bladders, six ureters and five kidneys. Sacculation of bladder and bilobed or multiple bladder are frequently acquired, and not congenital conditions, due to pathological changes in the bladder wall or interference with escape of urine, as in prostatic enlargement or stricture of urethra, or due to enlargement of a certain portion of the mucous membrane. It is claimed by some authors that the bladder originates from a double allantois, which owing to arrested development might cause a bilobed bladder. A case is mentioned by Heyfelder in which the septum was almost complete. Holmes describes a cyst which might have been in all probability a hernia.

4. Imperforate bladder or atresia of urethra. This condition is very rare. Cases are on record which have been associated with exstrophy, and hence are doubtful.

5. The posterior wall of bladder may be the site of the malformation, and the bladder communicating with the pelvic cavity, vagina or rectum. This form is unusual.

6. Both the anterior and the posterior wall may be defective. This condition is still more exceptional.

The urachus is often the seat of arrested development: 1, failure to obliterate at any point, giving rise to a urinary fistula opening at the umbilicus; 2, it may close at both ends, forming a cyst, which may be subdivided into smaller cysts; 3, it may close at peripheral extremity, but the remainder be unobliterated and communicating with the bladder; 4, it may close at visceral end and the remainder being open will cause a sinus at the umbilicus.

The abnormalities of the ureters consist of the following:

1. Double ureters are the most common, both of which may terminate normally in the bladder; both may terminate abnormally, or one may end normally and the other abnormally. Again, the double ureters vary in shape. Two distinct pelves, with the ducts uniting at any point on their way to the bladder, may enter that viscus through a single orifice. They may remain entirely separate throughout their course; or a single pelvis may divide into two. Complete duplicature has been reported by Chance, Schneider, Erlach, Ramsey and others.

2. Absence of ureter is extremely rare. Cases have been reported by Förster and Bartels.

3. Abnormal termination of ureter may exist by opening into a male genito-urinary organ, namely, bladder; prostatic portion of urethra; seminal vesicle, ejaculatory duct, vas deferens. In the female, the termination may be into the bladder; vagina; vestibule, urethra, under hood of clitoris, and Gärtner's duct. Open termination into the rectum is extremely rare. Such cases have been reported by Richardson, Camper, Simon, Gross and Meyer. Blind termination of ureter may exist as cystic dilatation; or no dilatation, associated with absent or atrophied kidney.

4. Congenital flexure of ureter may occur with no signs of inflammation, and after releasing the flexure, the fluid escapes easily.—Weigert. These conditions are in frequent association with other deformities.

An explanation of the anomalies of the ureter is given very clearly by Fenger. "If the ureter does not separate from the Wolffian duct, but remains a branch of the latter, the ureter will terminate in the seminal passages in man, and in woman in Gärtner's duct. If the ureter separates from the Wolffian duct, but does not move up into its normal place in Lieutaud's triangle, we will have an abnormal termination, low down in the prostatic portion of the urethra. If ureter separates from the Wolffian duct without emptying into a hollow organ, a blind termination results. If the ureter, instead of moving forward into the anterior portion of the cloaca, remains at its original location in the posterior portion, we find the termination of the ureter in the rectum. Double ureters originate either as a double branch from the Wolffian duct or as a single branch, which later divides."

The condition of exstrophy of the bladder includes, as a rule, all the cases of gastro-schesis in which the fissure is in the lower part of the abdomen. It is seen in different varieties or degrees of the same variety: 1. There may occur no fissure in either abdominal or bladder wall, but an absence of symphysis, with hernia of the bladder.—Mayo. 2. The bladder wall is perfect and protrudes through abdominal fissure or the umbilicus.—Vrolik. To this condition the term "ectopia vesicæ" has been applied. 3. The ordinary form is fissure in both abdominal and vesical walls. This form has been subdivided by Winkel as follows: Fissura vesicæ inferior, or closed symphysis with defect below; fissura vesicæ superior, or closed symphysis with defect above; absence of abdominal wall, of anterior bladder-wall, of symphysis pubis with cleft of external genitals. This last division he calls "eversio et ectopia vesicæ." 4. Anterior and posterior walls of the bladder may both contain a fissure, and thus occur in two halves, separated by an opening of the intestinal tract.—Bartels, Retzius, Friedlander, Rose, Frænkel, Meckel, Vrolek, Færster, Dietrich.

To the ordinary form of this defect many names have been given: ectopia vesicæ, ectropium v., ecstropia v., extroversio v., inversio v., eversio v., fissura v., eversio et ectopia v., exstrophy of the bladder, and congenital hiatus of bladder.

The term "exstrophie" was first applied by Chaussier, in the year 1780, and has been almost universally adopted at the present time. The words "ectopia vesicæ" have been generally accepted as indicative of that rare condition described by Vrolik in which the anterior wall of bladder is not defective.

In the common form of exstrophy the clinical picture is so very characteristic that if the treatment was as easy to carry into effect as the diagnosis is easy to arrive at, the history of this affection would not be such a sorry

one as regards results in attempts at correction. Extensive fissura abdominalis occurs in females almost entirely. Exstrophy of the bladder occurs with much more frequency in the male. Of 68 cases collected by Mr. Earle in 1828, 60 cases were in males and 8 in females. Holmes in his experience found none in females. Sir H. Thompson reported 8 cases, 2 in females. McWhinney mentions 7 males and 2 females. Phillips collected 21 cases in females. Braxton Hicks reported 14 in males, 2 in females and 4 doubtful. Geoffrey St. Hilaire found one-fourth of the cases in females. Duncan says this condition is found "more often in males because the generative organs are more complex. It has been pointed out that deficiencies in anterior median line occur most frequently in the male. Deficiencies in posterior median line occur with more frequency in the female sex." These cases were frequently mistaken for hermaphrodites; or else male children were considered to be females. In 1808, Soden reported a case of exstrophy which is of interest, as it shows with what difficulty the sex of the individual has been decided on in some instances. The patient, 24 years of age, wore a skirt and was baptized Sarah L——. After examination by three medical men, Sarah was pronounced a male. In 1860, Buck and Coote wrote in the *Lancet*, under the title, "A Short Account of the Post-Mortem Examination of the Body of a Person Who for 73 Years Passed for a Female; Congenital Malformation of Penis, Scrotum, Testes and Pelvic Bones with Complete Absence of the Urinary Bladder." One explanation of the discrepancy in the proportion of occurrence in sexes, is that, cases in the female were not recorded. Owing to the natural modesty of the sex, there was less of an inclination to let the matter become known. As misleading features, might be mentioned the dress, usually that of a female; small testes lost in large labial folds of skin; the width of hips, causing the waddling gait, which is an exaggeration of the female gait; and the feminine mode of micturition, in those cases in which the urine is retained for a short space of time in the dilated ureters.

This deformity is not incompatible with a comparatively long lease of life, and even in some cases with the power of reproduction. In the male the sexual potentiality is usually absent, if not sterile, the abnormality rendering him impotent. In the female conception and delivery is sometimes possible, as in cases recorded by Huxham and Bonnett, Thiebault, Ayers, and Hamilton. Many of these cases die in infancy, but judging from the literature, the majority reach adult life, and cases are on record in which the age of 40, reported by Bartholin; 46 and 49, by Quatrefages; 71, by Flajain; 73, by Coote, and 80 years, by Hamilton, have been reached.

The patient is usually seen during infancy or childhood, with a tumor presenting in the median line of the hypogastrium, at the site of the mons veneris.—See Fig. 1. This tumor is a red vascular, round or ovoid projection, which has at different times been mistaken for hernia, nevus and malignant tumor. Frequently this mucous eminence is divided into two, by a longitudinal narrow ridge, extending from top to bottom. This bilobed appearance was noticed by Champney, Chaussier, Breschet and St. Hilaire. It has been pointed out as a factor in favor of the theory that the bladder arises in two halves, which ultimately unite. This condition is one step in advance of those cases reported by Bartels, Rose and others, in which the bladder has not united and was in two halves, the halves being separated by an abnormal opening of the intestine.

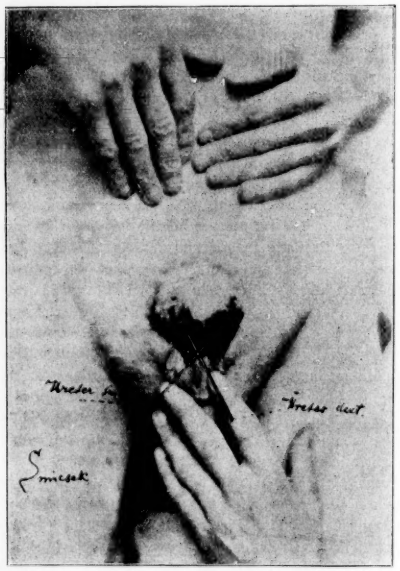
This elevated mass is, in reality, the mucous surface of the posterior bladder wall, which protrudes where the anterior bladder and abdominal walls are absent. This defect in the anterior wall of the bladder was formerly described as a cleft. Tenon, in 1761, observed and placed stress on the point that all of the anterior wall was wanting; that, as a matter of fact, but little more that the trigone remained. The degree of elevation depends on the intra-abdominal pressure. The recti muscles being separated, there is present a weakness in the abdominal wall at this location, a ventral hernia, as it were. Similar to other hernias, this swelling decreases or increases in size and volume, in accordance with the position and the movements of the patient. When standing it is more marked that when lying down and when straining, such as in coughing, sneezing, crying, defecating, etc., it becomes much more prominent.

The size of this swelling varies. In infants it is usually no larger than a walnut, but with advancing years it increases, and in adults may attain the size of a fist, from 2 to 3 inches long by 4 to 5 inches wide (5 to 8 by 10 to 12 cm.). The color is usually of a bright-red and is almost constantly varying slightly, owing to the external agencies which are always irritating this tender surface. At the edge of this mass, the margin where the mucous membrane passes into epidermis, is seen a boundary line or zone of smooth bluish tissue, such as is seen at the edges of the fissure in cleft-palate and hare-lip. In some cases this edge presents a margin of dense contracted connective tissue, evidence which has been claimed by some as a prenatal attempt at repair and cicatrization on the part of nature. The surface, as said above, is composed of mucous membrane, the "stratified, squamous or transitional" type of epithelium. The mucous membrane, as a rule, retains its characteristics and does not change as much as would naturally be expected, but persists as mucous membrane for many years, notwithstanding its location on an exposed part of the body, where mucous membrane is not found under normal conditions.

As bearing on this point, there might be mentioned the case operated on by T. Smith, in which he transplanted the left ureter into the colon. Afterward he noticed that the left side of the exposed mucous membrane of the bladder underwent a change in

appearance, "having become much lighter in color and somewhat cutaneous in character." That this exposed mucous membrane is kept continually moist may be the reason for its persisting as such. It is strange that in his case the urine from the right ureter should not have exerted an influence on the left side; for in the ordinary cases of exstrophy, a large portion of the mucous membrane is above the ureteral orifices; yet it maintains the characteristic features of mucous membrane. In the young it is tender and may bleed profusely on slight provocation, but soon becoming somewhat accustomed to the circumstances in

PLATE I.



Exstrophy of Bladder. (After Herczel.)

which it finds itself, its vascularity diminishes and the surface becomes quite tolerant of the unavoidable irritation, and the wall becomes quite hypertrophic. From the surface, usually at its lower portion, is observed the escape of the urine, which may dribble away almost constantly, or be expelled in small jets at irregular intervals. If in jets, it is almost certain that the ureters are more or less dilated. The ureters in many cases are dilated, as is also the pelvis of the kidney. Cooper mentions an instance where the ureter was larger than the rectum. Mörgelin reports a similar condition. Petit cites an instance where the dilatation was to an extent of 2 inches in diameter. Thilow relates finding the ureter very large, and Oliver reports a case of the ureter being as large as a child's intestine. Meckel says the ureters are often found dilated in other varieties of congenital deformities, as, for instance, in a case of an acephalous monster, in which the genito-urinary apparatus was otherwise normal. He claims that this dilatation of ureter might be due to some cause other than obstruction.

The course of the ureter in exstrophy is somewhat altered from that taken under normal circumstances. The cul-de-sac between the rectum, or uterus, and bladder is greatly enlarged inferiorly and anteriorly, owing to what is practically an absence of the bladder from the pelvic cavity. They enter the bladder from below, after descending into this deep cul-de-sac, and then ascending to the bladder. Normally, they descend comparatively straight from kidneys to bladder.

On close examination, it will be seen that the urine makes its exit from two small pyramidal prominences; at the apex of each will be found a larger or smaller opening which is the orifice of the ureter. It will be noticed frequently that there is no umbilicus; if present, it is only a flat pigmented spot. This absence gives to the abdominal wall above the exstrophy a most peculiar appearance.

Wood calls attention to the crescentic border of cicatricial tissue to be felt and seen immediately above the tumor mass, which he considers to be the upper or omphalo-mesenteric portion of umbilicus. A case is on record by Champneys where the umbilical cord was divided in two just before reaching the child's body; and another case by Dietrich, where two umbilical cords ran separately to the placenta. According to Duncan, a similar instance is spoken of by Littré. The pubic bones are separated at the symphysis to the extent of a few inches, or the bodies of the pubes are absent, the rami being connected usually by a band or bands of firm connective tissue.—See Fig. 2. A fact relative to this point is that in birds which have a cloaca the symphysis is absent.

Divarication of the pubic bones, or cleft symphysis, is commonly said to be an invariable sign in exstrophy of the bladder; but cases are on record where the symphysis was perfect, as noted by Coates, Draman, Roose, Walther and Quatrefages. Exstrophy may exist without cleft symphysis; so cleft symphysis may exist without exstrophy, as stated by McWhinney, Meckel, Vrolik and Mayo. Exstrophy with cleft symphysis is the ordinary form. Exstrophy with perfect symphysis is an uncommon occurrence, as in the case of Coates and others. No exstrophy with cleft symphysis is also uncommon, as in the case of McWhinney and others, while no exstrophy with perfect symphysis is the normal condition.

This separation of the pubic bones causes a separation of the recti abdominales muscles. This is noted especially above the exstrophied mass, extending up to the ensiform, where a flat, hard and resisting surface can be felt 5 to 8 cm. (2 to 3 inches) wide at the bottom, becoming narrower as it ascends. This is the

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connective tissue of the enlarged and thickened linea alba; the skin over this seems perfectly normal.

The thighs are separated farther than they are normally, owing to the cleft symphysis. When coupled with a bending forward of the body trunk, in an effort to protect the sensitive mass in the pubic region, it makes the gait a very characteristic one, and if once observed will be easily recognized on another occasion. The distress of the patient is both physical and mental, physically from the constant flow of urine and from the irritation caused by rubbing of the clothing. The irritation is not confined to the tender exposed mucous lining of the bladder, but often causes intertrigo, dermatitis, and eczema of the surrounding skin, most usually of the thighs. The papillary orifices of the ureters are irritated by friction of clothes or other cause. These orifices present a warty appearance and may be seen to discharge pus or muco-pus. This appearance is aptly likened by Wood to the granular conjunctiva induced by entropion of the eyelids. This irritation and inflammation of the ureteral orifices produce the ordinary effects of obstruction, as is seen by dilatation and hypertrophy of ureter, pelvis and kidney. It is similar to the condition in ordinary pyelonephritis or surgical kidney, and in ascending infection of kidney in cases of cystitis. Mentally, he must suffer, for owing to his pitiable condition, he is excluded from society and from all the ordinary pleasures which are supposed to make life worth the living. The individual thus afflicted is usually normal in other respects and enjoys good health. This fact makes his isolation all the more pitiable. On account of the constant escape of urine, the clothing is saturated and the odor is almost unbearable to all but the patient, whose sense of smell seems to have become "acclimated," as it were. The penis is rudimentary, short and broad, and is attached to the bladder near the openings of the ureters, with an epispadius more or less complete. John Wood states that epispadius is always an accompaniment, and cites one case where only the anterior part was epispadiac, the posterior portion of the urethra being closed. Küster reports a case of exstrophy in which the penile portion of urethra was closed, and on the dorsum of the penis a white cicatrix was visible. As a rule, it can be said that epispadius does exist without exstrophy; exstrophy does not exist without epispadius. The verumontanum and the openings of the ejaculatory ducts are to be seen in the bottom of this epispadiac groove, the imperfectly formed urethra. The testicles may be descended or undescended; either in the abdominal cavity, inguinal canal or scrotum. The latter may be divided or imperfect.

Herniæ are not infrequently found in conjunction with exstrophy, either a single or double inguinal or ventral. The perineum is usually defective. The anus, being located immediately behind the scrotum, is often

PLATE II.

Skiagraph, showing Separation of the Pubic Bones in Case of Exstrophy of the Bladder. (Dr. Weiner's Case.)

imperforate, but more often perforate, with prolapsus. There is also present a general looseness of the mesentery of the large bowel and duodenum. The pouch of peritoneum, cul-de-sac of Douglas, descends deeply between the front of rectum and the posterior surface of bladder.

In the female, associated with the exstrophic tumor, the clitoris and labia may be found in a malformed or immature condition. There may be present prolapsus uteri, owing to the pelvic floor being weakened by the divarication of the symphysis. An exstrophied bladder may become carcinomatous, as in a case mentioned by Kelly. In a young male cat with exstrophy, dissected by Geoff. St. Hilaire, the conditions were found to be the same as in man.

ETIOLOGY.

The cause of the deformity termed "exstrophy of the bladder" has thus far been a matter of conjecture; and at the present time, nearly two hundred years after the detailed description of this condition by Mowatt, no theory meets with universal approval. In 1877, Francis Champneys, in reporting a case, delves into the then existing literature on the subject very extensively, and devotes considerable attention to the different ideas advanced in attempting to explain the existence of such a defect. Among the causative factors may be mentioned, not on account of any scientific value, but merely as interesting facts or coincidents, the few cases of so-called "maternal impression." One woman, who was employed in eviscerating geese during her pregnancy, gave birth to a child with exstrophy of the bladder. Another woman, one of the mob during the "reign of terror" in Paris, gave birth to a child with a similar defect. In another instance, a wife fell from a tree, alighting on her coccyx, and in describing her sensation, said that she "felt as if her insides were being forced out in front." Shortly after the accident she was confined, the offspring being perfect in every detail except the presence of an exstrophied bladder. And, also, the case reported by Mowatt where the mother had been struck by a cow's horn and "the fright remained with her and did terrify her sometimes in her sleep." An allied interesting case is recorded which may be termed one of "paternal impression." Shortly before the birth of a child the father dreamed that his son came to him and showed him the bleeding stump from which his external genitals had been removed. The child on delivery was found to have an exstrophy of the bladder.

But, passing from the fanciful to more substantial reasoning, many theories are to be found. They may all be classified under the three general headings of mechanical, pathological, and arrested development.

1. Mechanical: Breschet considered as the etiological factor the bursting of the bladder due to distention or fetal movement. Duncan placed the order of sequence as follows: imperforate urethra, distention from retention, divarication of pubic bones, and rupture of bladder. Foerster places the cause with the accumulation of fluid in allantois, preventing the closure of the abdominal wall over it. Creve thinks it is due to separation of the pubic bones. Roofe supposes the cause to be due to external injury, separating at the same time the bones of the pubes and bursting the bladder. Rose found the right kidney in the pelvis. Ahlfred regards as a cause the rupture of the exposed and distended allantois, the excretory duct of which has not been formed. Rolgans states that it develops at the end of the fourth month of fetal life, and that pressure of the umbilical cord against the anterior abdominal wall, as the fetus is head downward and the cord between the legs, would be a causative factor. Morgelin considered obstruction of the urethra sufficient cause, the obstruction and distention beginning before the visceral plates have fused to form the abdominal wall. He believes also that adhesions of the bladder to the yet ununited abdominal wall have more to do with failure to close than rupture of the bladder from obstruction of urethra. Chance deemed as a cause over-distention of the allantois, followed by rupture.

2. Pathological: Velpeau and Benjamin Phillips lay stress on the extreme thinness of the abdominal wall in the early stage of its development, and believe that then laceration or ulceration takes place, causing the defect. They also look on the absence of the symphysis pubis, not as a divarication, or simple absence, but as a necrosis of bone. They call attention to the cicatricial boundary. Chaussier notes failure of the abdominal wall to develop perfectly, then destruction of the anterior wall of the bladder. Wood usually found adhesions of the anterior abdominal wall to fetal membranes "due to inflammatory or degenerative processes arising from specific diseases, such as syphilis, etc." Perls asserts the cause to be the presence of adhesions between the lateral plates and the amnion.

3. Arrested Development: Vrolik says: "It can only be explained by an imperfect development of the urinary bladder from the allantois. It is not improbable that the urinary bladder is formed by two half parts, which approach each other anteriorly and posteriorly on the mesial line. If this juncture does not occur, the different forms of vesica inversa will occur." Meckel says that the bladder is originally a flat surface, the edges subsequently uniting. Failure of this union of edges is given as a cause. Fyres gives as a cause deficient development of the urachus—allantois. Bartels, in his case, found an abnormal opening of intestine separating the two halves of a double exstrophied bladder. He believes the allantois to be developed in two halves, and in this case, the cause was said to be due to an abnormal development of the intestine occurring before the two halves of allantois had united. Geoffrey St. Hilaire and Vrolik, because of the following coexisting malformations, considered the defect to be due to arrested development: fissures of head and face, umbilical hernia, abnormalities of intestine, imperforate

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anus, spina bifida, bilobed appearance of the bladder in some instances, other defects in genito-urinary organs, occasional absence of the umbilical artery, fissured dorsal vertebræ, confluent toes, talipes, and genu valgum or varum. Reichel ascribed as a cause arrested development occurring in first weeks of fetal life, as a result of disturbances in formation of primitive streak, that is, coalescence of the borders of the primitive groove does not take place, or is defective.

This large number of various explanations is in itself sufficient to show that the causative factor or factors have not yet been pointed out. Many of these theories are at once seen to be based on a limited or imperfect observation of the cases or the literature. To the explanations classed under the heading of mechanical, the following objections have been raised: The bladder would be stronger than the abdominal wall. If the bladder ruptures, why should it always do so in the anterior wall and in a superior and inferior direction, while in adult life, when it occurs, as a rarity due to direct force or over-distention, in the majority of cases it extends from the insertion of the urachus down in the posterior wall, and the abdominal wall is never ruptured? The rupture need not be large, as a small opening relieves the pressure at once. Imperforation of the urethra does not occur; the urethra is too patent. Divarication of the pubic bones is not always present. No information is given as to how this injury to fetus causes this deformity. Pressure sufficient to cause atrophy of tissue in the abdominal wall would also be sufficient to stop or interfere with the circulation in the cord. If this pressure is the cause, why is the exstrophy so often associated with other deformities? Why is the defect so large as compared with the diameter of the cord and the area that it would press on? No case was found on record where the cord had exerted this pressure, and even partially produced this condition.

The objections to a pathological factor in etiology may be given as follows: This cicatricial appearance is seen in other deformities, such as hare-lip, and does not of necessity mean previous pathological change unless it should also apply to other deformities. If it is due to ulceration, why does not, occasionally at least, the intestine intervene between the bladder and abdominal wall and so fill in the gap or take part in the line of union? As a rule nothing except the deformity points to inflammatory change. That the os pubis is destroyed is very doubtful, and is not confirmed by any other investigator. Adhesions are not usual, and according to the majority of writers, syphilitic children are not prone to this deformity.

Under the caption of arrested development Meckel's embryology is not consistent with the facts. As to the others, under this heading, very little can be said, because no reason is presented for the sudden arrest of Nature's handiwork. It is found that the only theories which can be considered seriously are those which come under the heading of arrested development. Those falling under either the mechanical or pathological, or even combinations of these, have been shown to have some serious objection. Unfortunately, after having arrived at the conclusion that arrested development is the cause of exstrophy of the bladder, no more is known than before. And, for this conclusion to be of any practical value, the reason for Nature's stopping before her work was completed must also be known.

The causative factor in the formation of exstrophy of the bladder may or may not be of any practical importance after it is discovered and made evident to the profession. Even if the etiology is known, it may not be possible to follow that rule which has become axiomatic and universally in force in the practice of medicine and surgery, namely, "ascertain the cause and then remove it." But, knowing the manner in which the malformation is formed, the surgeon in all probability will be better able to operate in an effort to repair the defect, as is done in hernia; in the latter the philosophy of the process is known, yet it is impossible to prevent its occurrence.

ANATOMY AND HISTOLOGY.

The bladder varies in shape, size and position according to the degree of distension. When contracted it is of triangular form, its cavity assuming a Y or T shape, and is almost hidden in the pelvic cavity. When moderately full it becomes rounded, and if completely distended it is of an ovoid shape, with the larger end below and posterior, and the smaller end above and anteriorly. A line through its long axis would start from a point between the umbilicus and symphysis (depending on the degree of distension), going in a direction downward and backward, and would strike the tip of the coccyx. The average capacity of the bladder is one pint, though, of course, under pathological conditions too numerous to mention, this capacity may vary from eight or ten pints to that of a few ounces. The normal capacity, according to Hunner and Lyon in a recent and excellent work on mensuration and capacity of bladder, is 430 c.c.

The relations of the normally-formed bladder are of importance from a surgical standpoint. Anteriorly, the bladder is in relation with the triangular ligament of the urethra, subpubic ligament, symphysis and body of pubis and, if distended, with the lower part of the anterior wall of abdomen. The wall of the bladder is separated from these structures by loose areolar tissue and connected to the pubic bones by means of bands of fascia, designated in this location as the anterior true ligaments—pubo-prostatic, or pubo-cystic ligaments. Posteriorly it is in relation, in the male, with the rectum; in the female, with uterus and vagina; in both, loops of small intestine may intervene. Superiorly it is in relation with the abdominal or peritoneal cavity, the urachus, and loops of small intestine. Inferiorly it lies over the urethra and prostate. Laterally, the sides, when distended, are rounded and prominent. When empty, they are merely curved edges. At the upper part

it is in relation with the peritoneal cavity and loops of small intestine; in males with the vas deferens; in females, the viscus is connected with the fascia by means of loose areolar tissue, which is continuous with the broad ligaments. Each side is crossed obliquely by the obliterated hypogastric artery, which joins the superior vesical artery and also serves for attachment.

The bladder, though a movable, or rather a distensible, organ, is held quite firmly in position by means of true and false ligaments. The true ligaments, so called because formed of folds of rectovesical fascia, are five in number: two anterior ligaments, extending from pubes; two lateral ligaments, extending from lateral wall of pelvis, and one, the urachus, serving also as a ligament. The false ligaments, formed by folds of peritoneum, are also five in number: two posterior, from sides of rectum or uterus, form the lateral boundary of reco-vesical fold of the peritoneum, and contain the ureters and obliterated hypogastric arteries. The two lateral are reflected folds of peritoneum from the iliac fossa; and one superior, a fold of peritoneum extending from the fundus to the umbilicus, covering the urachus and obliterated hypogastric artery.

The base of the bladder is a very important part of the organ. In the male it is triangle-shaped, bounded at the sides by lateral surfaces; in the front by the base of the prostate, and behind by the cul-de-sac formed by the rectovesical fold of the peritoneum. Behind the prostate are the vesiculæ seminales and vasa deferentia. The base of bladder is directed backward as well as downward and rests on the second portion of the rectum, to which it is adherent by dense fibro-areolar tissue. The bladder may be punctured through the rectum at this point without injuring the peritoneum. But in exstrophy the peritoneum dips down much deeper, as was found in Lloyd's case. In the female, it is separated from the rectum by the vagina and cervix. This part of the organ adheres to the vagina, its relationship depending on its degree of distension. The "neck of the bladder" is a phrase used to designate the junction of bladder and urethra, and by some anatomists to include the prostatic portion of the urethra. It is the lowest portion of the bladder when the individual is standing erect.

Blood-supply.—The arteries are the superior vesical and the obliterated hypogastric; the inferior vesical, which usually arises from the superior vesical; the middle vesical; the obturator, which gives off a visceral branch; and the sciatic, which occasionally does the same. All of these arteries arise from the anterior trunk of the internal iliac. The veins do not accompany the arteries constantly. They form an irregular and inconsistent network of vessels, which surround the lower part of the viscus more abundantly than its fundus—the vesicoprostatic plexus. These veins all terminate in the internal iliac vein.

Lymphatics.—These vessels arise from the entire surface of the organ, chiefly on the posterior surface and neck, and run beneath the peritoneal coat through small glands to join others from the prostate; they finally enter the internal iliac glands.

Nerve-supply.—The bladder is in communication with the central and sympathetic nervous system by means of the sacral plexus of the former and the hypogastric plexus of the latter. The nerves arising in the hypogastric plexus have been traced almost exclusively to the fundus of the bladder; those originating in the sacral plexus, and especially the branches of the fourth sacral nerve, are distributed to the neck and base. Some of these nerves are distributed to the muscular coat and others to the mucous membrane. Microscopic ganglia are found along the course of the nerves in the bladder.

The wall of the bladder is composed of the following layers from without inward: 1, serous; 2, longitudinal muscular; 3, circular muscular; 4, submucosa, and 5, mucosa.

1. The serosa or peritoneal is not complete. The anterior surface is almost entirely devoid of peritoneum when the bladder is empty. The peritoneum is reflected from the bladder to the anterior surface of the abdominal wall, where it changes from visceral to parietal peritoneum. When the bladder is distended the urachus is not sufficient to prevent the falling down of the peritoneum as a cul-de-sac, and covering a large part of the superior portion of its anterior wall. This space, anterior to the wall and below the peritoneum, was first described by Retzius, and hence is called cavum Retzii, and is of great importance in cystotomy by means of the suprapubic incision. Laterally, the serous coat does not invest the entire surface, being absent below the obliterated hypogastric arteries. The posterior surface is entirely covered by the peritoneum. The base is only partly covered by this outer coat; it is absent where the bladder and rectum (or vagina) are in intimate relationship. The structure of this membrane is necessarily the same as the serous membranes in other parts of the body. It is composed of a layer of endothelial cells resting on a layer of connective tissue.

2. The longitudinal coat is composed of unstriped muscular fasciculi. It is separated into more or less perfect subdivisions of outer, middle and inner layers. The outer longitudinal layer originates from the body of the pubes—musculo-pubo-vesicalis—and extends up the anterior surface, over the summit and down posterior surface, becoming attached to the prostate, or in front of the vagina in the female. The fibers are somewhat oblique on the sides, and of course overlap each other. This layer has been named the "detrusor urinæ." Mercier ascribed to this muscle a double function: *a*, to force the urine toward the neck of the bladder, and *b*, to open the orifice and keep it so during the act of micturition.

3. The circular muscular or the middle layer is not particularly noticeable over the body of the bladder, but at the neck the fibers unite, forming the circular band of muscle called the sphincter vesicæ. The mus-

cular fibers of the neck have been described as descending into the urethra, or into the verumontanum or capus gallinaginis of the urethra. It is supposed that this structure acts as a valve to the urethra, falling down into the tube and obstructing it when the sphincter is closed and rising up so as to stand erect in the middle line, thus allowing the urine to flow by during the act of micturition. The internal longitudinal layer is thin and inconspicuous, except where two oblique bands of fibers originate behind the orifices of the ureters and converging become united and are inserted into the prostate gland or vagina. These were called "muscles of the ureters" by Sir C. Bell, and are supposed to maintain the obliquity of the ureteral insertion while the bladder is contracted, thus preventing regurgitation.

4. The submucosa is not very marked and consists of an interlacing of very loosely connected areolar tissue connecting the muscularis and mucosa in such a manner that the latter may be able to move considerably over the former. Within this layer are found the vessels and nerves which supply the mucosa.

5. The mucous membrane of the bladder is continuous with that lining the ureter and urethra. It is composed of epithelium in layers of cells, each stratum being composed of cells differing in size and shape from those of the other layers. In the deeper layer, that which rests on the submucosa, the cells are roughly columnar in shape; in the middle layers, more round or ovoid, and in the superficial layers the individual cells are distinctly squamous in configuration, the so-called "transitional or stratified squamous epithelium." The mucosa is connected to the muscularis loosely by the submucosa, and hence is capable of a limited independent motion. If the viscus is empty the mucosa is usually thrown into folds, which are not permanent, as they disappear on distending the bladder. At one situation, the triangular area at the base, these folds or rugæ do not appear, owing to a more firm attachment to the muscularis. The mucous membrane shows no villi. Small racemose glands are to be found, especially at or near the orifice of the urethral opening. Small lymph-follicles are also present in the mucosa of the bladder.

The inner surface of the bladder presents at its base the trigone, trigonum vesicæ, or "triangle Lieutaudii." This is, as the name implies, a three-sided space, with its apex located behind the urethral orifice, and its base bounded on each side by the openings of the ureters. This space is almost an equilateral triangle measuring about 1½ inches (3 to 4 cm.) on each side. The mucous membrane over this area is bound quite firmly to the muscularis and presents no rugæ. Immediately behind the posterior border of the trigonum the base of the bladder is normally more or less sunken, and is termed by the French the "bas fond." In cases of hypertrophy of the prostate or muscular atrophy or weakness this is the region which becomes deeper and is the seat of retention with its chain of symptoms and often of calculi-formation. In many cases an increased thickening of the submucosa, causing an elevated ridge of mucous membrane extending from the trigonum forward to the urethral orifice, is present, which has been called the uvula vesicæ. This divides the bladder into two halves, which may have something to do with embryologic formation.

The openings of the ureters into the bladder are quite peculiar and of the greatest surgical importance. The ureters are inserted into the bladder obliquely, according to Cabot, extending obliquely for the distance of 1 to 1.5 cm. between the mucosa and the muscularis. The opening on the mucosa is one at each superior angle of the vesical trigone. The orifice is at times difficult to locate, owing to lack of any visible opening and little or no change in the surrounding mucosa. At other times the opening is at the tip of a prominence, the "mons ureteris" of Kelly, or it may be in a more or less distinct depression. Kelly found in young nulliparous women, at the ureteral opening, a small round dark point, which was never observed in multipara. This oblique insertion is supposed to act as a valve in preventing regurgitation. The peculiar muscular bands described as running from the ureteral orifices to the prostate were supposed to be for the purpose of maintaining this oblique insertion even with marked contraction of bladder. The first to point out this valve-like action of the ureteral insertion was J. L. Petit, a Frenchman, who early in 1700 called attention to the fact that when the viscus was dilated the anterior wall of the duct was brought forcibly into contact, and held so, with the posterior wall of tube, thus sealing effectually the opening and preventing any back-flow. The fact of dilatation of ureters and pelvis of the kidneys was rationally explained by stating that the inferior orifice was closed; hence, urine could not escape as it was secreted from the kidney, and as the gland continued to functionate necessary dilatation of duct and pelvis occurred. This was accepted as an established fact for many years. With increase in knowledge and more accurate methods of observation it soon became a well-recognized fact that inflammation of the ureter and kidney did take place as a result of cystitis. These facts led to experimentation on the lower animals. Lewin and Goldschmidt, in 1893, reported experiments made on dogs and rabbits. Colored fluid was injected into the normal bladder, and the colored particles afterward found in the ureters and pelves of the kidneys, in all probability carried there by an antiperistaltic movement. Courtade and Guyon repeated the above experiments with the same results, but noted the fact that the regurgitation occurred with less frequency in dogs, where the muscular development was more marked. Kelly, in recording his own observations on the reflux of air into the ureters, has noticed this phenomenon in at least twelve cases. The air enters without being perceived, but it soon becomes heated and then escapes in visible bubbles at the ureteral orifice.

He says in conclusion: "The fact that gas will enter the ureters simply shows that they are not air-tight under some conditions, and does not prove in any way that they are not water-tight under physiological conditions." These experiments, accompanied by observations, have caused it to be an acknowledged fact that regurgitation may and does occur, but not under normal conditions. When it does occur there is some pathological activity in the vicinity; or the fact that regurgitation does take place, if not followed by pathological change, will not be noticed. The experiments above cited demonstrate conclusively that regurgitation may and does occur in the normal bladder of the lower animals. Under normal conditions, if the valve becomes defective and nothing but plain non-infected urine regurgitates, no more damage is done than when the urine secreted by the kidney can not escape and there is resulting dilatation of the ureter.

But if septic matter, infectious material, is in the bladder, then the necessity under this abnormal pathological condition for a perfectly working valve is imperative. The experiments with clinical experience show conclusively that this valve is sometimes defective. The importance of the ureteral valve can not be overestimated, and certainly should be considered carefully before attempting implantation of this valve into a septic cavity like the rectum, sigmoid or colon. Another valve, like unto this, is sometimes defective, namely, the opening of the ductus communis choledochus, the mechanism of which is quite similar. It has been clinically established that this orifice is many times at fault, as in catarrhal cholangitis.

The ureter claims our attention when considering exstrophy of the bladder. It is a muscular tube 25 to 30 cm. (10 to 12 inches) in length, extending from the kidney to the bladder. On account of the higher position of the left kidney, the left ureter is longer than the right. The diameter is about that of an ordinary goose quill, 3mm.; but this is only an average diameter, and is not uniform, the tube presenting three quite constant points at which a diminution in the caliber will be found: 1, at a point 3.5 to 5 cm. (1½ to 2 inches) from pelvis of kidney; 2, the place where it crosses the iliac artery, and 3, at the junction of its pelvic and visceral portion. The duct runs a sigmoid course, its length exceeding the shortest distance between kidney and bladder. At the pelvis, on a level with the spinous process of first lumbar vertebra, the ureters are 9 cm. (3½ inches) apart; at the ileopectineal line, 6 cm. (2½ inches); at ischial spines, 10 cm. (4 inches); at entrance into bladder, 4 cm. (1½ inches). On account of this tortuosity the ureter may be picked up and lifted 3 to 4 inches into the abdominal incision without doing any serious damage. Also in implanting it into neighboring tissues or organs, its lower end will permit of considerable transportation owing to this S-shaped course. The function of the ureter is to carry the urine from the kidney to the bladder, and in doing this the muscular coat is called into action, as is seen in the peristaltic movement descending in waves at regular intervals. Thus, the function is not passive, but active. This peristaltic action was noticed by T. Smith, in 1879, while transplanting the ureter into the colon, and he spoke of it as follows: "It was observed that more urine flowed from the right ureter than from the left, and that the flow was not continuous, but at intervals; the ureters contracted and forced the urine out with a gush, etc." Kelly tells of starting this action by manipulating or pinching a ureter during an operation. The ureter is in its entire course extra- or retro-peritoneal, located in the retro-peritoneal space and surrounded by a layer of loose fatty tissue. It imparts a peculiar sensation when grasped by the fingers, and may be seen as a white cord behind the peritoneum, to which it is attached. This attachment was suspected, but it is due to Cabot's work that the fact was demonstrated under the microscope. Thus, in stripping the peritoneum, the ureter is always removed with it. When searching for the ureter in its upper portion, Cabot noted that the ureter was just external to the line of adhesion of peritoneum to the spine. In searching for the ureter in the pelvis, it can easily be located at the pelvic brim at the division of the common iliac artery. For convenience of description, the ureter has been arbitrarily divided into abdominal and pelvic portions, the dividing line being at the common iliac artery, about 3 cm. above the brim of the pelvis. The abdominal portion is about 12 to 15 cm. (5 to 6 inches) long. In passing down from the large into the small pelvis, the left ureter lies between the vertebræ and psoas muscle; the right ureter, on account of the inferior vena cava, is situated a little more laterally.

The pelvic portion has, as a whole, a sigmoid course, and is from 10 to 12 cm. (4 to 5 inches) long. It is at first on the inner side of the internal iliac artery. In the upper pelvis it presents, acording to Glautenay, the following relations: It crosses the iliac vessels, lying behind the ileum on the right side and the sigmoid on the left side. It crosses over the pyramidalis and the obturator internus, separated by pelvic fascia; at this location it is behind the obturator and umbilical arteries, branches of the hypogastric. In the remainder of its course in women, it is crossed by the ovarian artery and vein, and the uterine artery. It passes through the base of the broad ligament, through a sort of ligamentous foramen, half way between the pelvic wall and cervix, along upper lateral vaginal wall; then curves to the anterior vaginal wall, terminating in the bladder midway between the cervix and meatus urinarius. In man it is crossed by the vas deferens and differential artery; then it passes on to the anterior surface of the seminal vesicle and enters the bladder, above the prostate.

The blood-supply consists of renal, spermatic, internal iliac and inferior vesical arteries. The blood-

supply of the ureter is a question of vital importance when implanting it into neighboring structures or organs. Any such procedure will necessitate the freeing of the duct for some distance, and hence the danger of separating it too much and interfering with its nutrition. Margarucci found a branch of the renal artery accompanying the ureter almost to the bladder, in dogs. From these, branches penetrate the walls to supply the mucosa. The ureter receives its blood-supply, for but a short distance, from the vessels of the bladder—hypogastric. It has its own vascular system, a branch of the renal, and does not anastomose to any extent with surrounding vessels. This would account for the possibility of isolating it from its surroundings without causing necrosis. Monari calls attention to the branches of the spermatic artery which serve to supplement those of the renal artery. These two branches form the main arterial system of the ureter, that coming from below the bladder being so small as to be hardly worth mentioning. Monari also studied on dogs the extent to which the ureter could be isolated from its surrounding connective tissue without causing necrosis. He found that from 12 to 13 cm. (5 inches) did no harm, if it was carefully replaced in contact with the tissue from which it was removed and the peritoneum allowed to cover it again. On the other hand, if isolated and kept away from adjacent tissue, as by wrapping gauze around it, if only to an extent of 6 cm., necrosis and leakage would result. The nerves are derived from the inferior mesenteric, spermatic, and hypogastric plexuses. The veins are not constant in their course and end in various neighboring vessels. The lymphatics are well developed, and form several networks between the different layers of the ureter. The wall of the ureter is 1 mm. thick and consists of three layers: fibrous, muscular and mucous. The fibrous layer is continuous above with the capsule of the kidney, and below with the fibrous capsule of the bladder. The peritoneum is connected by fibrous bands from this coat to the anterior wall throughout its whole extent. The muscular layer has been variously described as being subdivided into an outer and inner longitudinal, and a middle circular; and, again, as consisting of only an outer circular, and an inner longitudinal. There is no sphincter-like arrangement at the vesical orifice. The mucous membrane is continuous with that of the pelvis of kidney above, and of the bladder below. It may present longitudinal folds which are not permanent, as they disappear on dilatation. The mucous membrane is the transitional epithelium. No glands or papillæ are found.

HISTORY.

The literature of exstrophy of bladder is of comparatively recent date. According to Mazel, nothing relative to the condition is to be found in the writings of Hippocrates or Galen. The records of the "middle ages" are similarly devoid of reference to this subject. The first case reported appears as late as 1595 and is presented by John Schenke. A similar case was also recorded about the same time by Tobias Cneulin. It is not until 1670 that the first record of a female case is found, which is reported by Van Horne. Thus it is found that the sixteenth and seventeenth centuries pass with their pages practically blank in relation to this condition. But during the eighteenth century, the attention of medical men is being attracted to it, and in 1713, a peculiar case is recorded by Richardson, as follows: "One John Warnsnope, of North Brierly, a poor boy, lived until he was 17 years of age, and never made water, and yet he was very healthy, vigorous and active. He constantly had diarrhea on him, but without much uneasiness. The obstruction must have been in the kidneys, for he never had any inclination to make water. The serous part of the blood, which should have been thrown off by the urine, was discharged by the celiac and mesenteric arteries by the mediation of the glands into the guts. He died from fever." The above was written 187 years ago, and is interesting, because in all probability it was a case of ureterorectal, or vesicorectal anastomosis. The fact that the boy lived seventeen years is significant and of value at this time, when the Maydl method of treatment is being so widely discussed.

Huxham and Bonnett, under the title "Preternatural Structure of the Parts in a Woman, with an Account of Delivery," report the case of a woman who was 27 years old, in 1722. She was married, and had become pregnant. At the time of delivery, the physician was dumbfounded at finding neither vulva nor vagina. As a last resort, a free incision was made in the lower part of the abdomen, or where the vulva should be, and the successful delivery of a full-term child was accomplished. No mention of exstrophy of the bladder is made at this early date, but there can be no doubt that such was the condition existing.

Mowatt, in 1735, gives the following description of a case which came under his observation. This is the first valuable article to be found in the available English literature. "In November, 1732, a child was brought forth whose funis umbilicus was tied to the upper edge of a deep hole, and just above the ossa pubis this deep hole penetrated the peritoneum; but now a lump of spongy flesh rises out of it. The edges of the hole were at first and are now found sound. From the spongy flesh of this hole arise two papillæ about the size of the point of an ordinary probe, at which the urine constantly oozes; but when the child cries, the urine jets out as blood from the aperture of a small artery. The papilla on the left side is now closed, but the other keeps open as at first, through which the urine continually oozes and scalding all the parts, keeps them very raw. The penis arises immediately at the under side of the hole, was at first much less in size; it was and still is imperforated, and flat on the upper side next the glans, as if it had been slit

longitudinally. It has two small veins and a large prepuce inverted. The scrotum and testes were and continue in a good condition; the scrotum is corrugated very close to the end of two prominences; the raphe appears in its middle with wrinkles on each side; the testes lie under the prominences; they can be moved from the place they are seated in, either higher or lower as we please to put them. The distance between the scrotum and anus is longer than it should be; and the ossa pubis are longer and flatter than in other children. There is a large prominence on each inguen under which the testes lie. The child is healthy, active and stirring, and is very much affected with his misfortune; for he frequently cries upon viewing himself, and is very unwilling any other should see these parts. The mother is a very healthy woman; has brought forth another child every way sound and right in all its members. She tells that in May, before she was brought to bed of this her first child, she was struck in the belly with a cow's horn; she recovered the hurt in two or three days, but the fright remained longer with her, and did terrify her sometimes in her sleep. I have twice or thrice thrust down a small silver probe at the right papilla about an inch or more, but can not feel it in the perineum. I have also closed up the papilla two hours and three-quarters with a small tent and an astringent plaster over it, but can discover no swelling in the perineum, but rather in the belly. Upon withdrawing the tent the urine squirted a great way, but by the uneasiness of the child and the anxiety of the mother, I'm obliged to desist at present from any further experiments."

Devilleneuve, in 1767, reports a case, giving a comparatively accurate description of the condition found. In 1749, Buxtorf, assuming the condition found to be a hernia, made an attempt at relief in his case by applying a "plaster bandage."

The first rational attempt at treatment appeared near the close of the century in the silver-bowl of Jurine, of Geneva. The principle of this apparatus, the first and original method of treatment, is still in use at the present day, though, of course, the archetype of Jurine can at this date be hardly recognized, owing to the many important improvements and modifications. An apparatus for use in exstrophy is still recommended. Toward the end of the century there appears an account of a man 20 years old, in 1791, a certain Mathew Ussen, who is designated as a German traveler, was in the habit of going from place to place, and it is judged that he presented himself to medical men for examination, by whom he was looked on as a very rare curiosity. This Ussen was fitted with one of these silver bowls by Bonn, of Amsterdam. Upon seeing this same case, Roofe suggested connecting the "bowl" with a reservoir by means of a hollow tube.

It will be safe to make the assertion that, at the beginning of the eighteenth century, what is to-day known as exstrophy of the bladder did not exist and was not known as such 200 years ago. That there were cases then, as now, no one will question, but that they were not recognized, nor the true significance of the defect understood, must be admitted. The coming of the nineteenth century brought with it a fairly good knowledge of what to-day is known as exstrophy of the bladder. Yet, leaving out the Jurine apparatus, very little advance had been made in attempts at treatment. Cases were recognized and reported with greater frequency, to be sure, and they had to a certain extent lost their novelty. In 1805 Duncan collected 50 cases; in 1828 Earle collected 68 cases, and in 1833 Velpeau, about 100 cases. But if the profession as a whole understood what had taken place, it was far from being a unit as to the cause. It is to be observed, as significant of the trend of thought at this time, that when a case was reported, it was not deemed sufficient to record the facts as found, but at the same time to theorize as to the cause of this unfortunate side-step on the part of nature. To think of "granting nature the exercise of reason in her operations," shows that man must have been keeping a somewhat close watch on Dame Nature and her methods. As showing the interest which had developed at the time, there appear in the *Edinburgh Medical and Surgical Journal* for 1805, three articles on this subject. One was by W. H. Coates, presenting the case of a female with the peculiarity that the symphysis was perfect. Another case was in a female, reported by Sir Astley Cooper, where the ureters were increased in size to that of the rectum, and a masterly review of the existing literature on the subject by Andrew Duncan, Jr.

Dubois and Dupuytren suggested, in 1806, that it might be advisable in these cases to attempt to bring the defective pubic bones in apposition at the median line by the application of a compression bandage. Soden, in 1808, reports a case which was peculiar, in the difficulty with which the sex of the child was determined upon.

In 1827 Hamilton presents the first case which appears in the literature from an American. This case was of unusual interest, because of the patient being delivered of a child at the age of 40, and subsequently lived to the age of 80 years. In 1832 is found an admirable description of this condition by J. J. Schneider, and also an exhaustive thesis on the same subject by J. L. A. De Quatrefages.

During the remainder of the first half of the nineteenth century, there are found among many reports of cases, a few suggestions as to treatment, all of which were tried and usually found wanting. One was the method of Earle, where cauterization of the exposed mucous membrane was resorted to. Mowatt and others made the attempt to dilate the ureters in the hope that they could be made to take the place of the defective bladder. Wattman, Gerdy and Langenbeck's cases are noted, in which attempts were made to close the cleft by sutures.

The suggestion by Delpech, Bünger and Froriep that flaps of skin from adjacent surfaces might be utilized

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were all recorded before 1850. At that time McWhinney presented a very exhaustive paper on the subject, covering thoroughly the literature up to that date.

During the sixth decade, remarkable progress was made. Chance, in 1852, as an introduction to a presentation of two cases, says: "To the surgeons such cases are interesting because hitherto, as far as I know, they have entirely baffled every attempt at treatment. To the physiologist, however, they are still more so, because the agreement between them is so great that it proves such malformations are not the mere result of accidental erroneous development, but arise from some specific error acting invariably in the same manner, the nature of which error has not as yet been exactly determined." Following this, are the suggestion of Roux, that the ureters be transplanted to the rectum, and the operation of Mr. Simon, namely, ureterorectal anastomosis; that of Mr. Lloyd and Mr. Athol Johnson, vesicorectal anastomosis. Then came the first typical flap operation, that by Roux, who was succeeded by others; the decade ended with the comparatively successful cases of Drs. Pancoast and Ayres.

Despite this increase in the literature, that the condition of exstrophy of the bladder was still quite a rarity is shown by the report of Porter, in 1855, in an article entitled, "Bladder Outside of the Belly," where he gives a very accurate and complete description of a case, in part as follows: "A monstrosity so rare that comparatively few physicians of this country have ever had an opportunity of seeing it. Dr. Gross, of Louisville"—later of Philadelphia—"has seen but one, and that the individual in question. Professor Eve has seen two others, one of them in Great Britain. About 70 cases have been recorded in Europe, and a dozen in the United States. And, alas! there is no remedy for this dreadful deformity."

From 1860 till 1870 the flap operation was employed almost exclusively; and it was during this period of time that the method approximately reached perfection. Holmes presented a number of successful cases, on one of which he performed a vesicorectal anastomosis, on the principle of Lloyd, but by a different method. Wood introduced his method, which was destined to become the preferred flap operation. He operated on many cases, with remarkably few failures. In 1867, Thiersch presented to the profession a variation in the flap procedure, that is, the use of granulating flaps. During the next decade, in the vast majority of cases operated on, flaps were utilized. In this period, the method presented by Wood was repeated and underwent many modifications. The same can be said of the Thiersch method, but to a less extent. In 1872, Rose attempted to control the incontinence by making a communication between the vagina and rectum, and then diverting the urine into the rectum by closing the vagina. In 1876, Levis presented his ingenious procedure, and in 1879, Thomas Smith repeated the principle of Mr. Simon's operation. In 1881, Thiersch repeated the procedure of Holmes, in making a vesicorectal anastomosis. Glück and Zeller reported the result of their experimental work on dogs, and Sonnenburg presented his method. In 1885, another variation is advanced by Trendelenburg in his method, which might be called the osteoplastic. The remainder of the decade was occupied in repeating or slightly modifying the methods already presented. At the close of this decade, in 1889, Segond reported a new feature, being in reality a modification of Sonnenburg's, but still characteristic enough to be differentiated by his name.

At the beginning of the tenth decade, a great deal of work was being done experimentally in the implantation of the ureters into the rectum, on the lower animals. A few such procedures had been undertaken on the human being, but with an unfavorable outcome, by Küster, in 1891, and Chaput, in 1892. R. H. Reed, in 1892, did some very interesting experimental work; and, in 1893, Van Hook, in his notable work on the ureter, devoted some time to ureteral implantation. In 1894, Maydl presented his method of ureteral implantation, which has met with almost universal success. Boari, in 1896, brought before the profession a device, resembling in some respects the Murphy button. This was followed by Chalot's aparatus, in 1897.

After the introduction of Maydl's method the authorities seem to have become divided. One class believed in the efficiency of the "valve"—the normal ureteral opening—to prevent ascending infection; while others considered this, as a safeguard, practically worthless. Those lacking confidence in the trigone as a barrier against ascending infection worked with the object in view of devising some method by means of which infection would be effectually prevented from involving the ureter and kidney; and those who were satisfied with Maydl's operation for exstrophy, carried on the same work with the complete removal of the bladder—as in tuberculosis and neoplasm—as the end in view. In 1896, Krynski and Vigoni published, each a work along this line. Pousson reported also some interesting cases, and has tabulated 52 operations, by various methods, since 1889. These were followed in the next year by Pisani, who, in so far as he preserves the trigone, has merely modified the principle of Madyl. Mathes reviews the subject of ureteral implantation into the intestine, and reports two cases operated on by Eiselberg, after the Maydl method.

Toward the close of the century, and especially during the last few years, the literature has increased at a wonderful rate. During 1898 and 1899, Fowler and Martin each present a work on this interesting phase of the subject. The years 1899 and 1900, are found to be very prolific of contributions on this no longer neglected subject. Maydl reviews the operations by his method. The cases of Allen, Josserand, and Herczel add to the list, without increasing the mortality rate. Among other recent additions to the literature are: The masterly review of the subject by Mazel;

the brief, concise, thorough and very interesting discussion by R. Matas; the extremely interesting plastic operations of Rutkowsky and Mundell; the revival of the vesicorectal anastomosis in a much more practical method by J. Frank; the successful bilateral axial implantation for tuberculosis by C. Beck, of Chicago, and another for sarcoma by Krause; the unilateral case by Lenden, and the experimental work of Kalabin; the utilization of Sonnenberg's method by J. Rilus Eastman; the employment of the skin-flaps by Wheaton, Means, De Forest Willard, Shimonek and others; and the very recent experimental work reported by Peterson.

TREATMENT.

In considering the treatment for exstrophy of the bladder, the different methods may be classified under palliative and radical. The former includes all methods which, when completed, do not give to the individual control over the evacuation of urine; the latter includes all methods wherein the result does admit of the patient retaining the urine for a variable length of time. The object of the palliative method is, primarily, the covering and protecting of the tender mass of tissue; secondarily, the formation of a cavity variable in capacity, with usually no sphincter-action at its orifice, or if present, very weak and inefficient; and thirdly, the placing of the structures in such a manner that the out-flowing urine may be more easily conveyed into a suitable receptacle. By the radical measures the object in view is to utilize the sphincter ani as a sphincter, and the rectum, or some portion of the intestinal canal, as a receptacle. The sphincter vesicæ is beyond recall, and in consequence the sphincter nearest at hand is called into service. Many attempts at repairing of the sphincter vesicæ have been undertaken, but with almost uniform failure. But the method of treating epispadias, suggested by Trendelenburg, if carried out in conjunction with the flap operation, may some time produce quite an efficient sphincter. Trendelenburg cites a case which, after operation, could retain the urine for three hours. The fact, that in suprapubic cystotomy the opening may and does assume the properties of a sphincter, has been cited, but it must be remembered that this sphincteric action is due to the part played by the recti abdominalis muscles, which are in apposition, and the suprapubic opening between them. In exstrophy the recti muscles are separated from each other for a distance of from 1 to 3 inches, and, therefore, can not exert any sphincteric action.

A—PALLIATIVE.

I.—Apparatus.

II.—Flap. 1. Of skin: *a*, epidermis in (reversed); *b*, epidermis out. 2. Of mucous membrane: *a*, remaining bladder wall of patient; *b*, intestinal wall of patient; *c*, bladder wall of lower animals.

III.—Suture of edges of fissure: 1. By direct suture. 2. Preceded by preliminary measures.

IV.—Miscellaneous: 1. Dilatation of ureters. 2. plaster bandage. 3. Catheters in ureters. 4. Fistula in perineum. 5. Ureters inserted into the urethra. 6. Nephrectomy on one side and lumbar ureteral fistula on the other.

B—RADICAL.

I.—Axial implantation. 1. By sutures. 2. By apparatus.

II.—Vesicorectal anastomosis.

III.—Implantation of trigonum vesicæ.

IV.—Implantation in a manner imitating normal insertion into the bladder; or an attempt to make a valve.

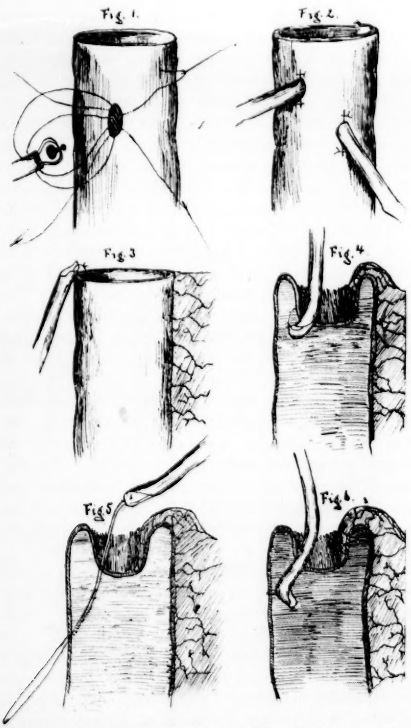
V.—Miscellaneous. 1. Vesico-vagino-rectal fistula, with colpocleisis. 2. Artificial anus; ureters inserted into rectum. 3. Artificial bladder: *a*, opening into urethra; *b*, opening into intestinal tract.

Palliative.—A. I. Apparatus. The efforts in this direction consisted in the application of an apparatus to cover the exposed mucous membrane. Jurine, of Geneva, was the first to contrive an apparatus meeting the requirements, which became known as the "Jurine bowl." This receptacle was attached to the anterior wall of the abdomen, immediately over the exstroverted bladder, and held in place by means of a belt and buckles. Being detachable, it was removed at night, cleaned and replaced each day. When properly applied, this contrivance controlled to a great extent the offensive odor. Likewise, it protected the delicate mucous membrane of the bladder, prevented excoriation of the adjacent integument by intercepting the escaping urine, and altogether was a priceless boon to the healthy, active young person thus afflicted. Bonn, of Amsterdam, in 1781, was the first to recognize the advantages of this apparatus. He modified the same and, as well as others, used it quite extensively, thus really introducing and establishing its merits. See Plate v, Fig. 1. This form of treatment was further improved by Roofe, in connecting the bowl with a reservoir by means of a tube. Another step in the treatment was the recommendation of Earle, that by cauterization of the mucous membrane, new connective tissue would form, which in contracting would reduce in size the space to be covered and at the same time lessen the sensitiveness of the area on which the bowl or shield would rest. This method of treatment in exstrophy of the bladder, though the oldest, is still recommended at the present day by many authorities. See Plate v, Fig. 2. "An instrument for everted exstrophy of bladder consists of a metallic or hard-rubber shield, to the lower extremity of which is attached an elastic tube, leading to a soft-rubber pouch, to collect the urine. This is buckled to the thigh, or may be carried down to the boot."

A. II. Flap, 1*a*.—Roux was the first, in 1852, to perform the regular flap operation, that is, the dissecting up of a portion of skin, leaving it attached at one point, its base, and turning it over as a leaf in a book on the exstrophied mass, with the epidermis in. He used an

abdominal and a scrotal flap, which were sutured over the mass. The stitches yielded and the flaps sloughed. Richard, in 1853, resorted to a modification of Nélaton's method of treating epispadias. He brought down an umbilical flap reversed. Then he dissected a scrotal bridge-flap, which was placed on the umbilical flap. This was the first application of superimposed flaps. The reversed flap with wound surface out was covered by the bridge-flap with raw surface in, thus giving normal epidermis on the outside, and the two

PLATE III.



Figs. 1 and 2, experiment No. 7. Figs. 3 and 4, experiment No. 8. Figs. 5 and 6, experiment No. 10.

wound surfaces in contact. Alquié, in 1856, used superimposed flaps, but added the new feature of effecting this in two steps. He was the first to make the flap operation in more than one sitting. Pancoast, of Philadelphia, in 1858, made the first successful flap operation. He used lateral semilunar flaps and sutured them in the median line. Primary union resulted, except at the inferior angle, which point was to have been operated on at a future time. But the patient died of pneumonia two months after the first operation. Ayres, of Brooklyn, in 1858, was the first to report a successful case. A single curvilinear abdominal flap was employed, resulting in primary union of all except at the lower part of the line of union. This small opening was closed at a subsequent operation. This case was peculiar, in that the patient had been delivered of a child two months previous, with a resulting prolapsus uteri, which disappeared as a consequence of the operation. Holmes, in 1862, used lateral, superimposed flaps, the superior border of the flap being sutured to the abdominal wall at a second sitting. He has reported five cases with three successful results. The flap method which has met with the most favor and has been performed with success, such as accompanies a successful flap operation, is that performed, in 1863, by John Wood, of London. See Plate v, Figs. 3 and 4. On account of its popularity, his own words will be quoted in a description of the operation.

The upper flap should be figured by a line extending along the side of the bladder surface vertically upwards as far as the measured distance from the root of the penis to the upper margin of the bladder and then carried in a rounded curve across the "linea alba" at this point to join another vertical line of equal length on the opposite side of the bladder. The two groin flaps for superposition are to be made of a rounded lancet-shape, with their roots downwards and inwards at the base of the scrotum and continued along the side of the urethral groove for about half its length.

These flaps should be long enough and detached enough to meet in the median line for their whole length and no sharp angles should be left in their outline. The incision for making them should join that of the lateral border of the first or umbilical flap at about its center. In raising the umbilical flap care must be taken not to make the skin too thin, which is apt to be done in the center of its base near the upper margin of the bladder. At this point there is little or no subcutaneous tissue and the aponeurotic and tense linea alba is thin and easily injured by the knife, consequently the greatest care is required to avoid opening into the peritoneum or subperitoneal fascia.

It is better to lay hold of the flap with the fingers than to use the forceps, which are apt to damage the vitality of the edge of the flaps, on the direct union of which a good deal of the success of the operation depends. In raising the lateral or groin flaps the superficial external pudic vessels are divided, and are often large enough to require ligature.

The upper or umbilical flap should first be dealt with, folded evenly down with its skin surface to the bladder, its corners being stitched with thickish wire sutures to the cut edge at the root of the penis on each side.

The groin flaps should then be placed on the raw surface of the umbilical flap, with their inner edges held in contact along their whole length by six closely-applied wire sutures. The bases of these flaps should pretty closely embrace the root of the penis. The raw surface left by the reflection of the umbilical flap can be easily covered by drawing its edges together with three or four strong and long harelip pins, which have the effect of relieving any strain which may affect the reflected flap. At this stage of the operation the patient's shoulders shou'd be well raised and his knees bent and adducted; to diminish the stretching of the abdominal parietes. The upper borders of the groin-flaps may be held upwards by one or two thick wire sutures, but the site of the groin flaps shou'd be left to heal by granulation.

In the female, the umbilical flap should be large and the incision for the groin flaps on each side should be carried well down, so as to have their roots in great measure connected with the labia. When they are placed together and stitched on the umbilical reversed flap, the vagina should be almost

closed up by them, with but a small opening to allow the passage of the urine. Through this opening a very large india-rubber drainage-tube should be kept in the vagina and be changed and cleaned daily.

As a supplemental procedure in the male, the operation for the epispadias which remains, and for a preputial covering for the penis, will usually be found necessary.

This method has been modified very extensively, and is, in fact, the principle upon which is based nearly all the flap operations of to-day. Slight variations and improvements have been presented by Michel, Ashhurst, Le Fort, Bigelow, Greig-Smith, Shrady, Mayo Robson, Wheeler, Marsh, Bennett, Richelot, Rickerts, De Forest Willard, and others. Moury, in 1871, utilizes the scrotum and perineum in forming the flap, which he turns upward and attaches to a short abdominal flap—1 inch—by means of a tongue-and-groove suture. The penis is slipped through a small opening in the center of the scrotal flap, thus allowing the urine to pass without coming in contact with the wound. Several cases are reported with a satisfactory result. Gross, in speaking of this method, says that it is the most eligible for males.

A. II. Flap 1*b*.—Thiersch began the operative treatment of exstrophy by curing the epispadias by his own method. The defect in the bladder was then covered with flaps of skin. He cut three skin flaps. An upper pedunculated skin flap, large enough to cover the whole defect, was taken from the middle abdominal region and turned downward, so that the skin surface was directed toward the mucous membrane of the bladder. This flap was sutured to the previously freshened borders of the defect. At the same time, two lateral bridge-shaped skin-flaps with a double pedicle were marked out and dissected up from the subjacent tissue. These two flaps, which are connected at their ends with the surrounding skin, remain, for the time being, in situ. Tinfoil, oiled silk, iodoform gauze, or the like, are inserted beneath them, and they are allowed to granulate. After a time, these granulating skin flaps are detached at one end, laid over the granulating first flap and sutured together in the median line. In this way the anterior wall of the bladder is composed finally of these three flaps of skin. The skinning over of the granulating defects is hastened by means of Thiersch's skin-grafts. Billroth modified Thiersch's method as follows: He covered the defect with lateral granulating flaps only; a lower and an upper skin flap are taken, which at different sittings are laid over the defect with the granulating surface directed inward.

A. II. Flap, 2*a*.—In the reversed flaps one of the most annoying features in the after-treatment was the formation of phosphatic calculi on the hairs which continued to grow on the epidermic surface of the transplanted skin. An effort to exclude this disturbing element was made by Segoud. He dissects up the posterior bladder-wall as far as the entrance of the ureters, and then turns it down so as to make a covering for the groove on the dorsum of the penis. The glans is stuck through the prepuce and the latter is healed on to the bladder flap. The defect resulting from the detachment of the mucous membrane of the bladder is covered with two skin flaps. The urine flows from the ureters into a canal widened above and situated between the groove on the dorsum of the penis and the vesical mucous membrane, which has healed over it. Czerny used the following method: The vesical mucous membrane is dissected up from the periphery toward the center and then united, so as to form a cavity. This cavity is lined throughout with mucous membrane. The skin defects are covered with two lateral bridge flaps.

A. II. Flap, 2*b*.—Rutkowski, in 1899, presented a case in which he used a portion of the intestinal tract instead of skin, or merely mucous membrane, as the material with which to close the defect. By this method he, too, does away with danger of calculi forming on the hairs. At the same time he repairs a defect in a sero-musculo-mucous viscus by the aid of a sero-musculo-mucous tissue. This is certainly a much more ideal procedure than that where a tissue is employed which is composed of connective tissue, fascia and epidermis, with very little if any contractile muscular tissue or action. His method of procedure is as follows: He resects a loop of small intestine, leaving the resected portion attached to the mesentery. The severed intestine is reunited by an end-to-end enterorrhaphy. The resected loop is divided longitudinally along its convex border, thus giving a broad piece of sero-musculo-mucous tissue—quite similar to the normal bladder which is sutured into the defect of the bladder. One case is reported which left the clinic two months after operation. Upon dogs, he has watched the change in mesentery and mucous membrane. The vessels of the mesentery become gradually obliterated, and the columnar epithelial cells of the intestine in time are replaced by squamous epithelial cells as in normal bladder.

A. II. Flap, 2*c*.—Mundell, in 1899, having met with favorable results in experiments on lower animals, suggests the following method of using normal bladder tissue with which to repair the defect instead of skin, mucous membrane or intestine. "Transplant a portion of bladder wall of, say, a sheep, to the lower lateral abdominal fascia of the patient. After a period of seven or eight days, the union of the two tissues is sufficiently strong to allow a plastic operation whereby a skin flap, with the bladder attached, may be swung over on the exstruded bladder and the edges of the attached piece of bladder sutured to the defective bladder."

A. III. 1.—Wattman made the first plastic operation in 1844 for exstrophy of the bladder. The normal skin was dissected up to a sufficient extent on each side, then pulled forward and sutured in the median line. This case was not encouraging in the result. Necrosis of the flaps took place and was followed by the death of the patient. Gerdy, in 1845, united the bladder in a man-

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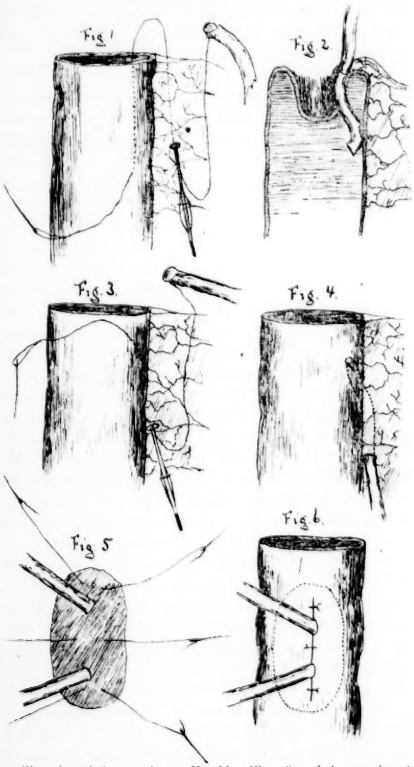
ner similar to Wattman's procedure, in two cases. The sutures yielded in both, and in one death ensued in five days. In 1849, Langenbeck made a similar operation. After loosening the skin from the posterior wall, it was drawn forward and the edges held in apposition by the aid of "insect-needles." Additional support was given by the application of adhesive plaster. No record was made of the outcome. Wakely, in 1851, suggested drawing the edges over a silver bowl and then suturing in place. The object was to keep back the posterior wall of the bladder, which in many cases pushed forward and so obliterated the cavity. This was never put into effect. Wyman, in 1885, successfully closed the fissure in a case of exstrophy in a child five days old, by the use of hare-lip pins. The patient died two months later of a cause not associated with the condition or the operation.

PLATE IV.



Figs. 1 and 2, experiment No. 11. Figs. 3 and 4, experiment No. 14. Figs. 5 and 6, experiment No. 24.

A. III. 2.—As early as the year 1806, Dubois and Dupuytren proposed to approximate the fissured wall by means of a compression bandage, thereby advancing the application of lateral pressure. This principle has been used quite extensively during recent years by Trendelenburg, Passavant, Neudorfer and others. The osteoplastic method, introduced by Trendelenburg in 1885, has for its object the restoring of the parts to their normal position. By a separation of the sacroiliac synchondrosis he was enabled to bring the rami of the defective pubes into apposition and so form an artificial symphysis. This was followed by suturing the defect in the median line. The separation of the sacroiliac synchondrosis, in children of 3 years, proved to be a very simple and safe operation. To close the defect in the bladder, borders of skin were freshened and held in apposition by means of silver-wire sutures. If primary union does not take place, a secondary operation becomes necessary. König and Küster modified the operation of Trendelenburg, while still retaining the principle. They performed osteotomy on the anterior portion of the pelvic girdle, instead of separating the sacroiliac synchondrosis. Passavant proposed to accomplish the closure of the pelvic bony gap by the application of "brisement force" under the influence of an anesthetic. This suggestion was carried out successfully by Koch. In 1886, Neudorfer relieved the tension and rendered approximation of the margins possible by means of two lateral horseshoe-shaped incisions—the convexity outward—which included all the structures of the abdominal wall to the fascia transversalis. Before suturing the cutaneous margins, the mucous membrane is detached on each side far enough to allow suturing of the same in the median line. Over this the skin is sutured; the os pubis, after its surface has been freshened, is sutured with silver wire. Mikulicz proceeds as follows: Two lateral curved incisions are made 3 to 6 cm. from edge of the vesical mucous membrane and almost parallel to it. This incision penetrates to, but not through, the transversalis fascia or peritoneum. Two lateral bridge flaps containing the entire thickness of the recti muscles are thus formed. The insertions of the recti are freed by removing a small fragment of the pubic bones with them. The entire flap is then dissected up and transplanted toward the median line. The bladder-wall is then dissected free and sutured in the median line, the sutures not involving the mucosa. The flaps are now united in the median line with silver wire. The lateral wounds are allowed to heal by granulation. Escape of urine is provided for by a catheter in the neck of the bladder. As in other flap operations, at subsequent sittings the epispadias is repaired and then the neck of the bladder receives attention. Schlange recommended practically the same, with the exception that the bladder-wall is not dissected free, thus avoiding the danger of sloughing of this portion of wall. Murry reports a successful recovery of a case in which he employed the simple procedure of dissecting free a lateral flap on each side and then uniting these in the median line with the aid of tension and button sutures.

A. IV. 1.—Mowatt, in 1735, made the first attempt recorded to relieve the condition of exstrophy. He endeavored to dilate the ureters by closing their orifices with "a small tent and an astringent plaster over it." This procedure caused the child so much discomfort that he was compelled to cease his efforts at treatment, which were, as well, in the line of investigation. In 1842, Chassaignac resorted to dilatation of the ureters. He closed the orifice by inserting a sound in the hope that the dilated ureter would act as a substitute for the bladder. Turbulent symptoms of urine retention were soon evident and his method yielded nothing of value. Breschet, in 1845, tried the above procedure and fever resulted. Gibb, in 1857, also made an unavailing attempt with the same method. Later, in 1861, Bouisson to this end devised a ureter clamp after the manner of a serrefine. But, as in the other cases treated on this line, no satisfactory result was attained.

A. IV. 2.—A plaster bandage was employed by Johannes Buxtorf in 1749. Thinking the protruding mass was a ventral hernia, he attempted to reduce it and maintain the reduction by employing a plaster bandage. The final outcome was the death of the patient.

A. IV. 3.—Catheters in the ureters were used by Pipelot in 1792, who attempted to remove the inconvenience arising from the continual dropping of urine. He retained them in place and allowed them to empty into a receptacle. This device, ingenious enough in itself, did not accomplish the desired result.

A. IV. 4.—A perineal fistula was made by Levis in 1876. He passed a needle, threaded with wire, through the bas fond of the bladder, through the intervening muscular and connective tissue, and out through the skin of the perineum, midway between the scrotum and anus. In this way he established a fistulous communication between the bladder and perineum. The bladder was covered with scrotal flaps and the deep perineal muscles through which the fistula passed were supposed to impart a sphincteric action. Only two cases were recorded, both of which met with an unfavorable termination. One death was due to peritonitis, and the other to an independent cause.

A. IV. 5.—Ureters inserted into the urethra. This ingenious method was introduced by Sonnenberg, with no attempt at a natural receptacle or sphincter. It is merely a method which is not so dangerous as the radical procedures, and as a result it leaves the patient in a condition more suitable for the application of an apparatus. In 1881 this surgeon extirpated the bladder in an extreme case of exstrophy. The entire posterior wall of the bladder was separated from the peritoneum without opening the latter and the resulting defect covered by sliding over a flap from the side. The ureters were dissected up from their normal situation and sutured into the dorsal groove of the penis beneath the edges of the skin flap. The patient's condition was so far improved that he could carry a simple urinal. This method has been repeated with a good result by Nehans, and in this country by J. Rilus Eastman.

A. IV. 6.—Finally, nephrectomy on one side, with lumbar ureteral fistula on the other, has been recorded by Reginald Harrison, in 1897. The first step was a removal of the left kidney through a lumbar incision. The second step, eleven months later, consisted of an extraperitoneal implantation of the remaining ureter into the right lumbar incision; recovery resulted.

OBJECTIONS: Against all these palliative operations may be placed the fact that, with a few exceptional cases, no sphincter is provided, and a receptacle large enough for practical purposes is not provided.

Apparatus, as a rule, does not fit, and so leakage occurs. If attached sufficiently tight to prevent leakage, pressure necrosis is liable to follow. Likewise, considerable attention is required to keep them clean and inoffensive.

Where a flap of skin is used, the urine comes in contact with the wound or raw surface, often causing infection and sloughing. That normal urine is aseptic has been demonstrated conclusively; but, in the majority of these cases, there exists a cystitis of the remaining bladder wall with occasionally a ureteritis or nephritis, in consequence of which the urine is not innocuous. Partial failure is the rule, necessitating one or more subsequent operations. Mikulicz operated on one case nine times, and Billroth on one case nineteen times in twenty-two months. In cases where the epidermis is turned in, phosphatic calculi often form on the hair, and cause much discomfort to the patient. The posterior wall of the bladder is not pushed back to its natural position in the pelvic cavity, and by its protrusion forward the new cavity is reduced considerably in size. The scrotal tissue, which is utilized in some methods, has been proved to be ill-adapted for use as a primary flap.

Where the remaining mucous membrane of the bladder wall is used, the newly formed cavity is usually too small to decrease the troublesome incontinence to any marked extent. This bladder wall, when removed from its surroundings, frequently sloughs from inefficient blood-supply. The utilization of the intestinal wall, after resection, isolation and enterorrhaphy, is certainly a most formidable procedure. Transplantation of the bladder wall from lower animals, thus far, has only been performed experimentally, and needs further investigation. Necrosis of the transplanted flap is to be expected as a result in many such cases.

The coaptation of the edges of the fissure by direct suture is rarely successful. There exists great tension, which often causes sloughing of the flaps, and in addition the same drawbacks that are to be found in other palliative measures. Matas says, in speaking of the results obtained by the various methods accompanied by preliminary steps: "Nor better functionally is the old and original method of Dubois and Dupuytren, resurrected subsequently in a more formidable and dangerous form by Trendelenburg, Passavant and Neudorfer." A

tendency to weakening of the pelvic girdle is present. There is no union in front and an artificial lack of solidity occurs behind. In females undue narrowing of the pelvis may result. Treves stated that "In the most successful cases a urinal can not be dispensed with."

Dilatation of the ureters, the plaster bandage, catheters in the ureters, and fistula in perineum are merely of historic value. In cases in which the ureters are inserted into the urethra no attempt is made to form a bladder or sphincter, the aim being merely to facilitate the application of a receptacle. The method of treatment by a nephrectomy on one side and a lumbo-ureteral fistula on the other is very heroic and results in little, if any, improvement of the patient's condition, the effect being a single lumbar urinary fistula instead of a double one in the pubic region. In this case the normal kidney was removed, which is, by the majority of surgeons, considered unjustifiable.

PLATE V.

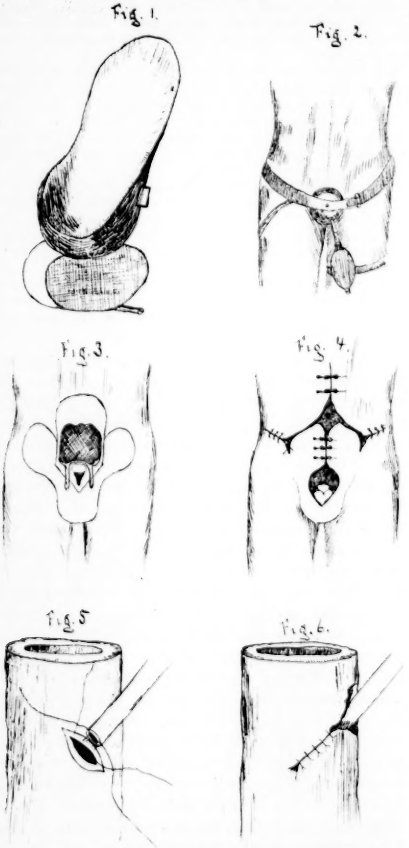


Fig. 1, apparatus worn by Matthew Ussen, 1791. Fig. 2, apparatus recommended at the present time, 1900. Figs. 3 and 4, Wood—flap method. Figs. 5 and 6, Chaput—uretero-intestinal anastomosis.

B. I. 1.—The deviation of the urine into the rectum was first suggested by Roux, of Toulon, and performed independently by John Simon, of London, who, in 1851, performed the first ureterorectal anastomosis. As preliminary investigation he experimented on dogs and found that direct implantation of the ureter presented great difficulties to be overcome, and the result was almost always fatal. Profiting by the experience of Mr. Lloyd, he examined specimens in the British Museum in an endeavor to find how low the fold of peritoneum extended. But this could not be satisfactorily determined. He had a catheter made with a stilet of watch-spring ending in a sharp point, in which was an eye for the thread. On July 5, 1851, he passed the catheter up the ureter and succeeded in perforating its coats and those of the rectum, and by means of forceps in the rectum, brought down the thread. The instrument was then removed so as to leave one end of the thread out of the rectum and the other out of the orifice of the ureter. A fresh thread was inserted in the needle and passed at a point about half an inch lower down in the ureter than was the first, so that two ends of the thread protruded from the rectum and two from the ureter. "Now, to obtain a loop bearing on the coats of ureter and rectum, and dependent on a single thread and without a knot, Mr. Simon tied the two anal ends together, and, pulling on the second thread, effected his purpose. The very same succession of measures were taken on the other side. A slight peritonitis and fits of vomiting followed, but recovery from the operation resulted. Three weeks after the operation, only a slight trickling through the aperture of the ureters was taking place, most of the urine passing into the rectum and being expelled with feculent matter. On the thirtieth and the forty-first day the ligatures came away. Four months after operation, as some urine still escaped the natural orifices of the ureters, and as the artificial orifices were demonstrably patent, an attempt was made to close the mouths of the ureters by needles and hare-lip pins, but this did not accomplish the object sought. "Death within a year, with extreme suffering from disease of ureters and kidneys," occurred. This operation was undertaken with two objects, according to Mr. Simon: 1, the establishing of a fistulous passage into the rectum from the ureters, two to three inches above their termination, where in these cases, they course closely against the bowel; 2, the closing of the terminal part of the ureter, so that no urine might be shed on the surface of the abdomen, but that all might pass into the rectum and thence be discharged per anum. The first was completely attained, and the second had been only imperfectly realized. "On post-mortem examination the ureters were found choked up with cal-

culous concretions, which had been the immediate cause of death. The concretions were chiefly phosphatic. It seems probable that the surgical measures employed had excited inflammation along the mucous surface of the ureters, and that with the mucopurulent secretion there had unfortunately been mixed (as occasionally happens in other mucous inflammations) sufficient mortar-like material to make calculi, which, being retained, became an increased and eventually a fatal cause of ureteral and renal irritation. The preparation showed these concretions and also the free fistulous communication between each ureter and the rectum." The operation of Mr. Simon, properly speaking, was not an axial implantation, being a lateral anastomosis instead; but to simplify the classification it has been included under this heading, with this note as explanatory.

In the *Medical Times and Gazette* of 1872, the following is to be found: "Mr. Jones succeeded in making ureters communicate with the rectum and in closing the anterior orifice of left ureter. The actual cautery is now being applied around the margin of the abdominal aperture, so that by contraction the right ureter may be drawn toward a sort of cloaca which exists between the ureters and rectum. In a second case the communication is also completed between the ureters and rectum. Clamp forceps have also been applied to the anterior ends of the ureters after the introduction of the galvano-caustic. These clamps remained a week and then separated. Still no urine escaped in front, so that it was hoped the case was completed. In a few days a little slough separated, allowing urine to escape in front. In this case all urine passed per rectum for twelve days." Thomas Smith, of London, gives the following report:

In selecting a spot for connecting the ureters with the bowel it seemed that the lumbar region offered the greatest facilities for the operation, since in this situation both the colon and the ureter could be exposed without injury to the peritoneum.

The plan proposed for accomplishing the object in view was the following: To pass a long probe or fine catheter up the ureter from its vesical end as far as the kidney, so as to assist one in recognizing the tube in the cellular tissue of the loins; next, to make the ordinary incisions in the loins as for opening the colon; to find the ureter through the wound, and to pass a temporary ligature beneath it so as to have it at command; next, having withdrawn the probe, to expose the posterior surface of the colon, and dividing the ureter as low down as possible, to insert its upper or renal end through a small incision into the colon and fasten it in position by fine sutures. It was proposed to operate on one ureter at a time and to make the performance of the second operation contingent on the success one might meet with in the first.

Operation, June 19, 1879. The ureter was stitched by means of fine catgut sutures to the back of the colon; a small opening being made in the colon, the end of the ureter was pushed into the bowel, so as to protrude about half an inch into its cavity. A fistula in lumbar wound remained, but closed June, 1879.

August 28, 1880, fourteen months after the operation, the boy being in good health, the second operation was made on the same plan and with the same object, namely, to introduce the right ureter into the back of the colon. He died fifty hours after the operation.

Post-mortem examination, twenty-eight hours after death. The peritoneal surface was quite normal; no trace of inflammation; the lower end of the left ureter was found terminating just above the left common iliac artery. The pelvis of the left kidney was found distended with clear fluid having the appearance of urine; no trace of true renal structure could be found, what remained of the organ being reduced to a fibrous condition spread in a thin layer over the contained fluid.

The portion of ureter attached to the kidney measured 1½ inch in length, and terminated on the back of the descending colon; a probe passed down the ureter could not be made to enter the bowel. The right kidney was much enlarged, being as large as the organ in an adult.

The capsule adhered to the cortical substance, which was very soft and friable and contained many small cysts; the medullary substance was much softer than natural, but contained no cysts.

The pelvis of this kidney and the upper end of the ureter were distended with urinous fluid, and the latter was attached by five sutures to the back of the colon; in the interior of the colon, at its point of attachment to the ureter there was a vascular patch of mucous membrane about the size of a shilling. A small probe could with difficulty be made to pass from the ureter into the cavity of the colon.

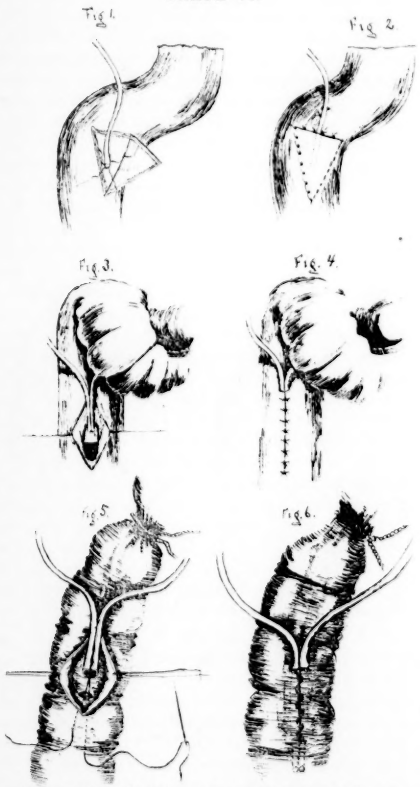
It is manifestly one's duty to record the facts of this case for the information of others, since it stands with Mr. Simon's case. I venture to record it as a warning to those who may be tempted like myself, to think that the miseries of ectopia vesicæ can be alleviated by making the ureters discharge their contents into the cavity of the bowel.

Setting aside all difficulties that have to be overcome, and the immediate risks of the operation, it would appear that a permanent and direct communication between the ureter and bowel is of itself a fatal lesion.

These two cases of Simon and Smith, with such unfavorable results, caused the method to wane, and not having met with popularity, it is not again mentioned in the literature until introduced by Gluck and Zeller, in 1881. These surgeons worked experimentally on dogs. Their method was a total extirpation of the bladder, after which the ureters, in some animals, were implanted into the skin, and in others into the rectum. All of the animals in which the intestinal tract was selected for the urinary out-flow died. Novaro, in 1887, made three bilateral implantations on dogs. Two of the animals died, the third lived and was killed thirty days after the operation. Renal infection was reported absent, though no bacteriologic or microscopic examination had been made. Bardenheuer, in 1886, implanted a single ureter in a number of experiments. The animals all recovered from the operation *per se*, but at the necropsy the ureter in each case showed a stricture at the site of implantation, which caused a hydronephrosis. In 1888, Paoli and Buzachi, in four animals, made unilateral implantations. One recovery from operation is reported. Tuffier, in 1888, made experimental implantations into the rectum, but in all cases death resulted from pyonephrosis and general peritonitis. He inserted the ureters so far into the rectum that the ends floated free. R. Harvey Reed, in six cases of bilateral implantation experimentally, met with six deaths, in 1892. In three implantations of a single ureter, one died of peritonitis, one subsequently of ascending infection, and the third resulted in a "perfect cure," no stricture or ascending infection having taken place. This third case was not examined microscopically nor bacteriologically. The method used was as follows: A loop around each ureter, consisting of a double braided-

silk ligature, with ends tied together, and armed with a slightly curved needle. An incision was made about one inch long in the rectum. This loop and needle were inserted into rectum for about an inch in a downward direction, and the needle made to penetrate the wall of rectum and by gentle traction, ureter was pulled into the lumen of the bowel, the aim being to have it from ½ to ¾ inch inserted into the rectum. The rectal

PLATE VI.



Figs. 1 and 2, Krynski—uretero-intestinal anastomosis. Figs. 3 and 4, Fowler—uretero-intestinal anastomosis. Figs. 5 and 6, Martin—uretero-intestinal anastomosis.

wound closed with a continuous suture, which embraced the peritoneum surrounding the ureters and firmly fixed them in the rectum without obstructing the lumen of either ureter. The loops of thread were then put on stretch and cut off close to the peritoneal coat of the bowel. Its elasticity allowed the loops to drop back into lumen of the rectum, while the peristaltic action and the passage of feces would sweep them off the ends of the ureters and carry them out with the stools. There was also incorporated in Dr. Reed's paper the following report: "In the case operated on by Dr. Leet, of Scranton, Pa., where the ureter was implanted into the rectum and the patient recovered from the operation, but died subsequently from an entirely different disease, not connected with the operation, I am told the patient suffered no inconvenience from the ureters being implanted into the rectum. And when a post-mortem was made there was found to be complete union without consequent nephritis. Neither was there stenosis of the ureter." Morestin, in 1892, performed in all sixteen experiments. Ten were bilateral implantations, all of which died, the cause of death being either peritonitis, pyelonephritis or hydronephrosis from stricture. Six were unilateral implantations, three being followed by leakage, and three by stricture. Küster performed, in 1891, on man, a complete cystectomy, followed by implantation of the ureters into the rectum. The patient died on the fifth day after the operation. The post-mortem revealed purulent peritonitis with kidney infection. Chaput experimented on dogs in a great variety of methods, but with almost uniform failure. In 1892, having heard of Reed's successful case on the dog, and considering that the operation could be more easily performed on the human being than on the lower animals, he decided to operate on the human being. For the relief of an uretero-vaginal fistula, he implanted one ureter into the colon. See plate v, Fig. 5 and 6. It is of interest to note that during this operation the iliac vein was opened by mistake, instead of the ureter. The result was called a recovery. Encouraged by the apparently favorable outcome of his first case, he again operated for tuberculosis of the bladder. The left ureter was inserted into the colon on Nov. 25, 1892. Recovery was complete and rapid; the result seemed to be a success. On March 1, 1893, the right ureter was inserted into the colon. Death occurred on the same day. Unfortunately, no autopsy was made. In his procedure, the posterior lip of the ureteral orifice is fastened to the still-intact intestine by three or four sutures passed through the muscular layers only. The intestine is then incised for about 1 cm. at a point several centimeters below the preceding row of sutures. The mucous layers of the posterior lips of the two orifices are immediately sutured, and the anterior lips are united by a row of sutures through the muscular wall. The entire end of the ureter should finally be buried at the bottom of a fold of the intestinal wall by means of Lembert stitches so placed that the union will be completely covered for a distance of about 2 centimeters. Rosceszewski, in 1892, made six one-sided implantations, five of which died. Three months after the first operation the remaining living dog was anesthetised and the ureter of the opposite side inserted into the rectum. The animal died of peritonitis. At the autopsy the site of the first inoculation was found to be the seat of a marked stricture, causing a pyonephrosis. Weller Van Hook, in 1893, in his classic contribution to the surgery of the

ureters, records some few experiments on the implantation of the ureter into the intestinal tract. After unilateral implantation eight times, five of the animals survived. But following the bilateral operation death occurred in all cases within six days. His method was as follows: After severing the ureter, ligate the cystic end of the duct, and then split the opening of the renal portion of the tube upward for a distance equal to three times its diameter. Cause two small needles armed with a single fine silk or catgut thread to pass from within outward through the split end of the ureter. The ureter is thus grasped in the loop. Now, pass the two needles into the bowel through a small longitudinal slit on the free border and carry them downward about one-half inch. When they are now pushed out through the rectal wall, the ends of the thread may be lightly tied together, drawing the ureter into position and permanently maintaining it there. The operation is completed by covering in the knot with two or more Lembert sutures, closing the rectal wound as well as possible without compressing the ureter, and applying a peritoneal graft. Thompson, in 1893, implanted experimentally into colon and rectum and, in reporting the same, mentions the difficult technic. After implantations into the small intestine, one animal recovered. On necropsy, a moderate hydronephrosis and a slight stenosis of the anastomotic opening was found. He called attention to the peristaltic action, which, by its short duration, but oft-repeated closure of the duct, may act as a causative factor in producing this dilatation. Giordano, in 1894, experimented on fourteen dogs, of which only three lived—77, 84 and 121 days, respectively. He endeavored to improve the results thus far obtained by operating extraperitoneally. Instead of using an anterior abdominal incision, he employed a lumbar, and in some instances even partially resected the sacrum. Duplay, in 1894, operated on a 10-year-old girl, implanting the ureters into the sigmoid, but death resulted. Rein, in 1894, in a case of exstrophy, sutured the ureters into the bowel. The immediate result was satisfactory, but the final result is unknown. Tuffier and Dujarier, in 1896, removed the bladder for carcinoma, after which catheters were fixed in the ureters by means of a stitch that penetrated the wall and its ends were left long. Small openings were now made in the rectum and the ends of catheters, ureters and stitches made to pass through these openings. Catheters and stitches protruded through the anus. Traction on these stitches was relied on to keep up the contact between ureters and rectal wall. The threads were knotted on a forceps and so prevented from retracting. Two months after operation the patient was in good health and able to work. Seven months after operation death occurred. No details were obtainable. Kalabin, in 1898, experimented on twenty-four dogs. On ten he made a bilateral implantation into the rectum, the animals dying in a few days from peritonitis. Fourteen unilateral implantations were made with no better result. In conclusion he states that implantation of both ureters is never admissible, and one ureter is to be attempted only in the most extreme cases. Schnitzler, in 1898, reports two cases of direct implantation, the first for relief of an uretero-vaginal fistula, in which he made an unilateral implantation into the ascending colon, which resulted in recovery. In the second case—carcinoma of uterus—both ureters were implanted, one into the ascending colon and one into the descending colon. In this instance death ensued in a few days, and on post-mortem examination pyelitis was found on one side. C. Beck, Oct. 4, 1899, presented before the Chicago Medical Society a case on which he had operated three months previous. He said at this time there was not the slightest symptom of kidney infection, and gave the following description of his operation: "The operation as performed is a suggestion of Maydl, partly the operation of Dr. Martin, with some modification of my own. The ureters were not implanted in the same line, but one above the other into the sigmoid flexure. The ureters were implanted in such a way that after they had been cut off from the bladder at a distance of an inch the ends of the ureters were dissected, a flap was formed in the gut consisting of peritoneum, subperitoneal tissue and muscular tissue, leaving nothing but the mucosa and submucosa. This flap was turned back and the ureter put underneath it. Underneath the flap a small opening was made and the ureter was drawn about an inch and a half into the bowel, so that the ureter was hanging free, with a portion of it in the bowel. Around this flap the ureter was carefully sutured in a sort of a groove of the wall of the bowel. The peritoneum below was sutured for a short distance." Plate vii, Figs. 3 and 4. Dr. C. Beck lays great stress on the end of the ureter lying free in the lumen of bowel. On account of this fact he expects to prevent infection or stricture. This placing of the free end of the ureter deep into the lumen of bowel was first performed by T. Smith in 1879, and by Tuffier in 1888.

B. I. 2.—Achille Boari, in 1896, presented an ingenious apparatus resembling in many respects the Murphy button, which he had devised with a view to reducing the time consumed in these operations, and also as an aid in securing more perfect union in ureteral implantation. See Plate vii, Figs. 1 and 2. Two successful cases were reported in which the button came away on the eighth and twelfth days, respectively. In neither of these cases had there been any signs of uremia since the operation. Also Chalot, in 1897, advances a mechanical aid, to be used as is the Boari button. It consists of a small tube with olive-pointed ends; a groove or depression, between the bulbous ends, serves to retain the ureter and rectum in contact.

B. II.—Mr. Lloyd, in 1851, attempted to utilize the sphincter ani by establishing a communication between the posterior wall of the bladder and the anterior wall of the rectum. The procedure which Mr.

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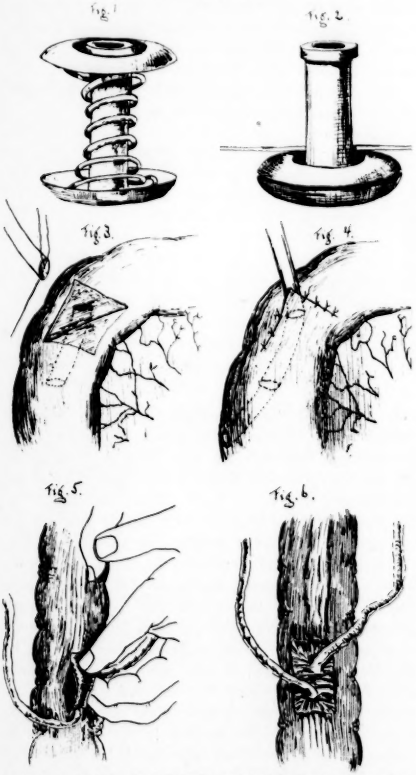
Lloyd adopted for eventually conducting the urine into the rectum was as follows: He introduced the index finger of his left hand into the anus and glided on that finger a seton-needle armed with a silk thread, to which was attached a thick skein of the same material. There was some difficulty in directing the needle around the pubic ligament from the rectum and close to the prostate into the posterior walls of the bladder,

PLATE VII.



Figs. 1 and 2. Boari-Button, uretero-intestinal anastomosis. Figs. 3 and 4. Carl Beck—uretero-intestinal anastomosis. Figs. 5 and 6. R. Peterson—uretero-intestinal anastomosis.

the greatest pains being taken to keep away from the peritoneum; but after a little while the needle was seen to transfix the tumor. The thread was now disengaged from the eye, the lance, which could be taken off from the stem, removed, the handle and stem withdrawn through the anus, and the skein pulled after the thread and made to pass through the protruded vesical walls. Mr. Lloyd considered that the traction exerted downward would cause the urine to pass by the skein into the rectum, and that in all probability a canal might thus be formed which would materially diminish the inconvenience produced by the malformation. The case proceeded pretty favorably up to the fourth day. On the sixth day Mr. Lloyd removed the skein of silk, but the man became much worse and expired on the seventh day after the operation. The body was examined with great care and it was found on opening the abdomen that the immediate cause of death was peritonitis. The rectum had much deviated to the left side of the sacrum and the peritoneum covered it as low down as the anus, so that the seton-needle had passed through the cul-de-sac formed by that membrane so much lower than usual. Thus it became plain how the peritonitis had been excited. Mr. Athol Johnson's case was a repetition of Lloyd's experience. The patient was a child, and death ensued shortly after the operation, from peritonitis. T. Holmes, in 1869, reports a case in which, after performing a flap-operation, he was not satisfied—a sinus persisting—with the result obtained. In an effort to divert the flow of urine into the rectum, he made an artificial communication between the imperfect bladder and the rectum. Profiting by the experience of Mr. Lloyd and of Mr. Johnson, he endeavored to reduce the danger of infecting the peritoneal cavity by using an apparatus similar to Dupuytren's enterotome in making the opening. One blade was placed in the rectum, the other in the bladder, and the two gradually pressed together. In reporting the case Holmes says: "The attempt failed, for though the urine passed in considerable quantities into the bowel, a good part of it still continued to escape above the pubes. I endeavored to obviate this by closing the suprapubic opening altogether by plastic operation. The opening was thus in fact reduced to a sinus. But this caused such intolerable pain when the bladder was distended and such accumulation of sabulous matter in it, that I was fain to abandon the attempt, break open the suprapubic hiatus again and allow the rectal communication to close." Thiersch, in 1881, practically repeated the effort of Mr. Holmes. "In order to avoid the use of a urinal by allowing the urine to flow into the rectum, Thiersch, in the case of a girl, brought about necrosis of the vesicorectal wall by the continuous application of a clamp." J. Frank, in 1899, advises the use of his "bone-coupler," the same as is used for enterorrhaphy, as an aid in establishing a vesicorectal anastomosis.

The operation consists of anastomosing the bladder to the rectum with my decalcified bone-coupler.

The technic is as follows: In a male dog the incision is made in the groin, and in a bitch, in the median line. Generally the bladder is found distended, and is emptied by squeezing it gently with the hand, when the urine escapes through the natural channel. The rectum is next picked up and freed of its contents, as in any intestinal operation. The bladder and the rectum are then brought forward and placed in apposition for anastomosis. Two or three interrupted Lembert sutures are now taken about half an inch below the lower ends of the incisions determined on in the bladder and rectum, care being exercised in selecting them that the coupler, when it is inserted, will not encroach on the ureteral openings in the

bladder. A longitudinal incision is then made in the bladder large enough for the coupler selected, and a puckering string applied over and over the cut margin. The rectum is next opened in its long axis and a puckering string similarly applied. The suture should be taken so that the free ends lie uppermost, thus facilitating easy tying. The operator now slips the coupler into the bladder opening, at the same time gently spreading the collars apart, while an assistant makes one knot and draws down on the puckering string until the rubber tubing is felt; another knot is made and the ligature cut off short. The other half of the coupler is then slipped into the rectal opening, and likewise tied and cut off. Several interrupted Lembert sutures are taken around the borders to make the work more secure. The operation is very simple and can be accomplished in ten or fifteen minutes.

He states that of fifteen dogs operated on, ten recovered and five died. This procedure has been performed once on the human subject by A. E. Halstead, of Chicago, the patient living for forty-eight hours, during which time the urine passed per anum with no leakage at site of suture in bladder wall. Death occurred due to shock.

B. III.—Tuffier was the first to propose the implantation of the ureter with its sphincter, its normal orifice, in order to prevent stricture and ascending infection. This is the principle utilized by Maydl in his transplantation of the trigonum. Maydl, in 1894, presents two cases of exstrophy of the bladder which he operated on. It is, in brief, as follows: The bladder-wall is loosened from the abdominal wall; then he opens into the abdominal cavity, at its upper part, and excises from the bladder an oval area containing the ureteral openings. The margin of this area is 1.5 cm. (⅝ inch) away from the orifices. The ureters are carefully dissected out, after having sounds inserted into them. This area, with the ureters attached, is now detached from all surroundings and the remainder of the bladder-wall extirpated. The sigmoid flexure is drawn into the wound and a longitudinal incision made in its convex surface. The isolated area of bladder mucous membrane, with ureteral openings, is now sutured in this incision in two layers, a row of mucous stitches and then the Lembert stitches. The bowel is then replaced in the abdominal cavity and the wound closed with drainage. A permanent drainage-tube is inserted into the rectum. In 1896, he reports three more cases, two of which recovered and one died, the death being attributed to the prolonged narcosis. He reports, in 1899, five more cases, all of which recovered. This method of Maydl, or the principle, that of transplantaing the trigonum, has been repeated quite extensively since its introduction, and has been modified slightly by some operators. Pisani extirpates all of the bladder except the site of the ureteral openings, which is transplanted to the posterior wall of the rectum, through an incision in the anterior wall. The mucous membrane of the posterior wall has been removed for an area equal in size to the surface to be transplanted. He has operated on two dogs; one died at the end of sixty-two hours of collapse, and the second on the sixth day, the post-mortem revealing septic peritonitis. Mauclaire similarly retains the trigone, but the method being so unique in other respects, it has been included under another heading (Artificial Anus). Peterson's method is as follows: "A rectangular flap is formed out of the trigonum, the edges of this flap being made at least one quarter of an inch distant from the ureteral orifices. The sigmoid flexure is drawn downward and incised to a distance equal to the space between the ureteral orifices. This trigonal flap is spread over the incision, so that the orifices open into the incision in the bowel. The external coat of the bladder-flap is united to the bowel by a right-angled continuous suture. The bladder mucosa is pushed inward and the needle passed so that the external bladder wall is inverted and made to rest against the serous coat of the bowel." See Plate vii, Figs. 5 and 6.

The operations based on the plan of Maydl, performed since 1892, are given below, with results:

Date of report.	Operator.	Number of cases.	Recovery.	Death.
1894	Maydl	2	2	
1895	Trendelenburg	1	1	
1896	Maydl	3	2	1
1896	Trombetti	1	1	
1896	Resegotti	1	1	
1896	Krynski	1	1	
1896	Park	1		1
1896	Wölfler	1	1	
1897	Mikuliez	1		1
1897	Ewald	1	1	
1897	Eiselberg	2	2	
1898	Tuffier	1	1	
1898	R. Frank	1	1	
1899	R. Frank	1	1	
1899	Nové Joserand	1	1	
1899	Allen	1	1	
1899	Herczel	3	3	
1899	Maydl	5	5	
		28	25	3

In 1897 Nové Joserand collected seventeen cases, including one by "Tarver," with no reference given. From the available literature, the only "Tarver" writing on this subject appears under the title: "Exstrophy of the Bladder in a Girl of 13 Years; Operation, Relief," in the *Medical Record*, July 10, 1897. This case was not operated on by Maydl's method, nor even a modification of the same. No communication was made with the bowel. Flaps of mucous membrane of the bladder were dissected free and then united, thus forming a small receptacle which held urine for from four to six hours at a time. Of the twenty-eight cases operated on by the Maydl method, or a close imitation of the same, three deaths are recorded, 10.7 per cent. In two cases, death was directly attributable to the operation *per se*, 7 per cent. And in this series only one instance is recorded where an ascending infection of the kidney and ureter has taken place, 3.5 per cent. These statistics, as is true of all statistics, must be viewed in the light of a possibility, that additional cases may have been operated on, but having met with an unfavorable outcome, have not been reported. The fact that these cases have lived for a number of years does not of necessity imply that the kidneys in these individuals are not infected. The first case operated on by this method, in 1892, has been lost sight of. The second case, ureters transplanted into sigmoid in 1892, is reported in 1899 as being in perfect health, thus making the duration of the trial extending about seven years. The first case of uretero-rectal anas-

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1901

tomosis on record in which the safeguard, the trigonum, was not preserved, lived for nearly one year and then died with infected kidneys. The case of Richardson, in which the urine passed per anum for seventeen years and then finally died "of fever," may be cited again in this connection. Cases of chronic cystitis may live comfortably for years without any symptoms of ascending renal infection; and, more rarely, other cases do acquire a pyelonephritis; the reason for this different behavior of these cases can only be surmised. It is claimed by some that even if infection may occur, the operation is nevertheless a justifiable procedure, because it allows the individual to become a useful member of society, at the same time enabling him to indulge in the customs of his associates as does the normal person. This state of affairs, it is claimed, if even for a short time, is to be preferred to a longer lease of life under circumstances which at best will make it pitiable. That the rectum will tolerate the presence and accumulation of the urine for a variable number of hours has been conclusively demonstrated by this series of operation and others, and also by the experimentation on the lower animals. In only two of the above cases was there incontinence, the others retaining the urine without any difficulty for from three to seven hours, and in one instance as long as ten hours. The Maydl method has not been employed extensively in experimenting on the lower animals; and in the few instances where it has been repeated on dogs the results have been essentially different from those obtained after operating on man. Kalabin has performed this particular method on five dogs, all of which died in from three to five days. R. Matas undertook to repeat Madyl's typical operation on two dogs, with death following in twenty-four and thirty hours, respectively, from septic peritonitis, evidently caused by infection from the bowel during the operation.

B. IV.—In order to prevent ascending infection, which was found to be so frequent a sequel following implantation into the bowel, other methods were devised with a view to the formation of an artificial valve at the seat of the anastomosis, or in cases where the natural orifices could not be transplanted. The effort was made to make the union with the intestine in such a manner as to imitate the natural oblique course of the ureteral insertion in the normal bladder. Kryinski, in 1896, turns back a triangular flap of rectal tissue composed of serosa and muscularis, and attaches the ureters in this exposed area; then makes a small opening in the submucosa and mucosa for the escape of the urine. The triangular area is then replaced and sutured in position over the ureteral ends. See Plate vi, Figs. 1 and 2. Vignoni, in 1896, made a V-shaped valve from the rectal wall; attached the ureters to this flap, and covered all by suturing the wound-edges over the valve. Fowler, in 1898, combined the advantages of a "valve" with those of an oblique insertion of the ureter into the rectum. See Plate vi, Figs. 3 and 4. He makes a longitudinal incision in the bowel down to mucosa, the edges of which he dissects and retracts laterally. Then he cuts a flap in the mucosa, tongue-shaped, with its base up. This flap is folded on itself, with a mucous surface on each side, and fastened in this position with sutures. The ureters are fastened to this flap, and then the flap, with ureters attached, is pushed into the lumen of the rectum, and the wound closed, the mucous membrane first, followed by Lembert stitches which extend considerably above the distal extremity of the ureter. His procedure differs from that of Vignoni in having the ureteral openings in contact with a mucous instead of a fibrous surface, and hence less liability to contracture or stenosis. Franklin H. Martin reports and exhibits specimens from three animals in which he had transplanted the ureters into the intestinal canal. Specimens were removed in four, eleven and twenty-two months. Two were single and one double, and in each case kidney infection was present. These three cases were the successful results in a series of thirty-four experiments. This demonstration was shortly followed by a presentation of a new method of making the union. See Plate vi, Figs. 5 and 6. This, in brief, consists of the following steps: 1. Dissecting ureters free for a distance of 3 inches; ligate and cut. 2. The ureters are placed side by side and approximated in this position by stitches, which do not enter lumen of ducts. One suture penetrates adjacent walls of both ureters near orifices. This suture is left long and is armed with two needles. 3. A 2-inch long incision is made in upper wall of bowel, penetrating peritoneal and subperitoneal tissue only, and exposing an oval surface of mucosa 2 by 1 inch. 4. Strip bowel of contents and apply clamps; make small incision through remaining coats of bowel at about one-third distance from lower end of denudation. This opening must be large enough to admit the two ureters without pressure. Insert the two needles into lumen of bowel through this opening and bring them out, slightly separated, through the wall at a point about an inch below the opening; that will be a little below the lower border of denuded area. Now pull ureters into where the stay sutures make their exit. 5. Place ureters at right angles to the bowel. Secure them to fibrous and mucous coats of bowel by means of a number of sutures, taking care not to penetrate into mucosa of ureter or to cause a constriction of the tubes. 6. Bury ureters in muscular coat of bowel by folding it over them for a distance of 1 inch and securing it to ureters by fine silk sutures. 7. Peritoneal coat is united over the ureters until they divide, and under them above the point. 8. Close abdomen, with gauze drain. The following "principles of the operation" are presented: 1. The uterers empty into bowel in the direction of its long axis, and urine is discharged in direction of the fecal current. 2. The ureters are buried in the walls of the rectum for an inch or more; the act of defecation will empty the ureter

by a milking process. 3. The ureters are protected by muscular coat of intestine. This coat will hold ureters closed when rectum is aiding in defecation. 4. The ureters are implanted in lower bowel, which is normally empty except when defecating. This method was employed upon nine animals, seven of which died and two recovered. One of those which survived the operation was killed after about three months while in apparent good health. On examination one kidney was found to be infected.

B. V. 1.—Rose, Gallet, and Resegotti report the cases which are included under this section. By making a small vagino-rectal fistula, and then closing the anterior vesical wall, with a closing of the vagina, the urine was conducted into the rectum.

B. V. 2.—Mauclaire advised the following procedure: A section of bowel is made at about the junction of the sigmoid and rectum. The distal end of sigmoid is sutured into the inguinal region or perineum as an artificial anus. The trigone, with the ureters, is placed within the proximal end of the rectum, which is then closed. This operation was performed on man by Gersuny.

B. V. 3*a*.—Tizzoni and Poggi conducted a series of experiments on dogs in an effort at making an artificial bladder from an isolated loop of intestine. In the first step, a loop of intestine was resected. At a second, the bladder was extirpated and the ureters inserted into one end of the isolated loop of intestine, the other end of which was connected with the urethra. As a result, incontinence was at first present, but normal evacuation soon followed. They also tried to do the entire procedure at one sitting, but met with failure in every instance.

B. V. 3*b*.—Hochenegg suggested an artificial bladder, also of a loop of bowel, but communicating with the intestinal canal.

OBJECTIONS: The liability to ascending infection of the ureter and kidney and stenosis of the opening of the duct, may be advanced as an objectionable point. Matas says: The operator who cuts off both ureters from the bladder and transplants them into the colon, must experience a certain and unavoidable anxiety—an axiety that only further experience will overcome—that is born of the feeling that he has burned his ship behind him and has staked all his patient's chances, all his hopes, in the hazard of the game. It is the utter and absolute hopelessness of remedying the evil when this does occur that must make any conscientious operator vacillate and question his mind and his responsibility many times over before deciding to embark in so perilous an undertaking."

The above-stated weak points will be found to hold especially true of the methods of axial implantation.

In vesico-rectal anastomsis the normal ureteral insertion, as a safeguard, is retained. The method of J. Frank is undoubtedly a marked improvement over the old and forgotten methods of producing anastomosis. Difficulty may be experienced in perfectly closing the anterior wall of the bladder. The operation is only applicable on the male, and it is noted in this connection that but few cases occur in the female. Martin and Taylor, in the "American Text Book of Genito-Urinary Diseases": "In the cases in which the intestine or rectum opens into the bladder, the bowel and contents greatly aggravate the severity of the inflammation and markedly favor ascending infection."

In implantation of the trignonum vesicæ, ascending infection occurs in some cases of cystitis, where the normal insertion of the ureters is not interfered with. 1. Is it not just as liable to occur, if not more so, after this area of bladder-wall is inserted into the rectum? 2. The so-called "muscles of the ureters," which tend to maintain this oblique insertion of the distal ends of the ducts, are separated from their origin and are hence rendered worthless. 3. According to Fowler, the rectum or sigmoid proper is not a closed cavity in the same sense that the bladder is, and accumulating urine can not exercise pressure to the extent that this occurs in the normal urinary viscus. 4. Danger of the implanted trigone to slough. 5. The existence of a congenital anomaly in the sigmoid or omega colon may occur, in which the mesentery is so short that it will be impossible to drag the colon to the median incision, thus seriously complicating the technique, as in Park's case. (Matas.) 6. The possibility of contaminating the peritoneum, in the course of the vesico-colostomy or subsequently, if sloughing should occur after the operation has been completed. (Matas.) Pisani's mode of procedure seems to present no particular advantage. Peterson has in no way decreased the time consumed, nor rendered the danger of kidney infection or peritoneal infection less.

The "valve" or particular manner of inserting the ureters into the wall of intestine, will, in all probability, prevent gross macroscopic contamination, but will be ineffective as a barrier against microscopic infection. The experiments thus far have not been particularly encouraging. Thompson, in speaking of the peristaltic action, considers it not a desirable point, but on the contrary regards the occlusion, short in duration but oft repeated, as a causative factor of hydronephrosis. This in itself is predisposing to infection.

1. In vesico-vagino-rectal fistula there exists the difficulty of establishing a water-tight communication from the ureteral orifices into the rectum. There are also the same objections as to others in this division. Ascending infection is reported in one case (Rosegotti), operated on in this manner. 2. The artificial anus theoretically is a marked improvement on the other methods, as the ureters open into, and the urine is conveyed to, a cavity comparatively sterile. The formation of an efficient sphincter for the bowel is doubtful and the resulting artificial anus would be by some considered but little improvement over the original con-

dition. The operation itself is quite formidable. 3. An artificial bladder opening into the urethra approaches in theory very closely the ideal. The mesentery as a band stretching across the abdominal cavity might be a cause of incarcerations and strangulations of the bowel. But practically the procedure would be a most formidable operation. An artificial bladder opening into the intestinal tract is a similarly dangerous undertaking, and as it communicates with the bowel, the new bladder seems to be of no practical value. The method is open to the same objections cited above.

EXPERIMENTS.

The following experiments were undertaken with a view to determine which of the less complicated methods would prove the most desirable ureteral implantation. The form of the report is a condensed table, or list of the experiments, with the results, and followed by supplementary notes in which details deemed worthy of mention are recorded.

EXPERIMENT 1.—The right ureter was inserted into the rectum by the Van Hook method; the animal made an uneventful recovery.

EXPERIMENT 2.—Both ureters were implanted by the Van Hook method and the animal died on the second day after the operation. At necropsy a diffused peritonitis was manifest, and fluid was found in the peritoneal cavity.

EXPERIMENT 3.—The right ureter was inserted, after the plan advised by R. H. Reed; the animal escaped the next morning.

EXPERIMENT 4.—Both ureters were inserted in the same manner as in No. 3, and the animal died thirty-six hours after the operation. Fluid was found in the peritoneal cavity, with peritonitis.

EXPERIMENT 5.—A bilateral implantation, into the rectum was made according to the plan of Chaput. (See Plate V., Figs. 5 and 6). Death followed on the second day from peritonitis and leakage.

EXPERIMENT 6.—A bilateral implantation was made by the method of Krynski. (See Plate VI., Figs. 1 and 3.) The result was about the same as in No. 5.

EXPERIMENT 7.—Implantation of both ureters was made by means of a "metallic nozzle." This contrivance consisted of a small tube with a bulb at one end, and two silk threads, each tied in the middle to the tube at the base of the bulb, and each end of each thread armed with a small round needle. (See Plate III. Figs. 1 and 2.) The needles were passed from within out through the walls of the ureter, at a reasonable distance from its cut end. Gentle traction on these threads drew the bulb into the ureteral orifice. A small opening was next made into the rectum and the needles passed into the opening and out through the rectal wall. Traction again brought the "tube" and ureteral end into the rectum; the threads were then tied on the outside, and the knot covered by a few Lembert stitches. Death resulted.

EXPERIMENT 8.—In this experiment an effort was made in the direction of an artificial bladder—from an isolated loop of intestine—similar to the method adopted by Tizzoni and Poggi. After making a median incision in the abdominal wall and bringing up a loop of intestine, six to eight inches of the bowel was resected, but retaining its attachment with the mesentery. This isolated loop was thoroughly cleansed by flushing with warm sterile water, then wrapped in warm compresses and laid to one side. The divided intestine was then united by circular enterorrhaphy and replaced in the abdominal cavity. The ureters were then located, ligated and divided; the proximal end was then laid on one end of the isolated loop of intestine and attached thereto by a silk suture, penetrating all coats of each. (See Plate III, Fig. 3.) This end of the loop was then invaginated, carrying with it the open end of the ureter, into the lumen. (See Plate III, Fig. 4.) The invagination was fixed in place by sutures. The other ureter was attached in the same manner to the opposite end of the isolated loop, and the middle of the artificial bladder thus made was sutured in the abdominal wound and then opened. The animal died on the second day from peritonitis.

EXPERIMENT 9.—A second operation was done by implantation of the left ureter, one week after the first operation, by the same method, that of Van Hook. Death resulted on the second day. On post-mortem the right side showed slight dilatation; cocci and bacilli were found in the pelvis; left side was negative. Diffused peritonitis was evident, with leakage.

EXPERIMENT 10.—This case was in all respects like that of No. 8, except that the cut end of the isolated loop was first invaginated, and then the ureters drawn into the lumen by the Van Hook method, and attached to the wall beyond the margin of the invaginated end. (See Plate III., Figs. 5 and 6.) The anchoring stitch was covered by Lembert stitches. The animal lived five days. Necropsy showed a general peritonitis, but no leakage. Both ureteral orifices were patent.

EXPERIMENT 11.—An attempt at this point was made to more effectively guard against leakage and infection by drawing the ureter through the v-shaped, triangular space at mesenteric side of the bowel—which is formed by the non-blending of the peritoneum after it surrounds the bowel. (See Plate III, Fig. 5.) A darning needle with a double thread was attached to the ureter, and at a point about 2.5 cm.—1 inch—from the cut end of the isolated loop of intestine, the needle was inserted into and traversed this v-shaped space to the incised edge, where it was brought out. The thread, at its point of entrance into the mesentery, was then grasped by a slender anatomical forceps. (See Plate IV., Fig. 1.) As traction is applied to the needle and thread, the forceps burrows its way to the margin, thus dilating the track of the needle. The forceps is then withdrawn and the ureter is easily drawn into this "sleeve" and out to an extent of about 1 cm.—½ inch. Then the cut end of the bowel is invaginated up to the point of insertion of the ureter. (See Plate IV., Fig. 2.) The ureter is anchored to the wall of bowel as before mentioned in No. 10. (See Plate III., Fig. 6.) The animal died on the sixth day from peritonitis. Both ureters were patent.

EXPERIMENT 12.—A repetition of No. 11 with death resulting on the third day; peritonitis; both ureters patent.

EXPERIMENT 13.—In all respects similar to Nos. 11 and 12, except that only one ureter—the right—was inserted; the opposite end of isolated gut was included in the abdominal wound. Recovery was the result.

EXPERIMENT 14.—Both ureters. In an attempt to retain the advantages of the "sleeve" and to add those of obliquity in implantation into the intact bowel, a variation from the last procedure was adopted. The darning needle and forceps, as used in No. 11, were again utilized. The needle, armed with the thread which is attached to the ureter, is inserted into the triangular space between bowel wall and mesentery, and is made to travel in this space for a short distance. Then the point penetrates the walls and enters the lumen of the bowel. After proceeding in the lumen of the gut for a distance of about 1 cm.—½ inch.—the needle again penetrates all coats and is brought out on the side of the bowel about .5 to 1 cm.—¼ to ½ inch—above the mesenteric attachment. The thread is grasped by the slender forceps, and by the aid of gentle traction, the forceps bores its way through the coats into the lumen of the bowel; then after slight dilatation of this artificial canal, the forceps is removed and the ureter pulled into the bowel, along the passage thus made. (See Plate IV., Figs. 3 and 4.) Death on the third day.

EXPERIMENT 15.—A repetition of No. 14, except that one ureter—the right—was inserted instead of both, with the result that the animal recovered.

EXPERIMENT 16.—Similar in all details to No. 14. Both ureters were inserted by the so-called "sleeve" method, resulting in death on the fourth day.

EXPERIMENT 17.—The animal in experiment No. 15 had recovered apparently. The right ureter had been implanted by the sleeve method into the ileum, five weeks previously. Now

the left ureter was implanted by the same method, with the result that the animal might be said to have recovered from the operation per se. But seeing that ultimate recovery was improbable, the animal was chloroformed nine days after operation. The right kidney was a hydronephrotic sac, enlarged to the size of a bladder fully distended. The right ureter was enormously dilated, with complete stenosis of the orifice. In the lumen of the bowel, the site of insertion of the ureter was almost obliterated in the folds of the mucous membrane. The ileum in the vicinity of the inosculation was decidedly hypertrophied. The left kidney, as also its ureter, was slightly enlarged, dilated and congested; the ureteral orifice was patent but reduced in size. Colon bacilli and cocci were present. There were no colon bacilli in the right kidney; a few cocci were present.

EXPERIMENT 18.—Both ureters were implanted by the "sleeve" method described in No. 14. Death occurred on the third day from peritonitis.

EXPERIMENT 19.—A repetition of No. 18, resulting in death on the sixth day.

EXPERIMENT 20.—Trigone. A typical Maydl method was employed. Death resulted in two days; necropsy revealed a diffused peritonitis.

EXPERIMENT 21.—The same as No. 20, with the same result.

EXPERIMENT 22.—The "sleeve" method, as in No. 14, was again employed. The right ureter was implanted, with a resulting recovery.

EXPERIMENT 23.—The same steps were utilized, as in No. 22, with the same result.

EXPERIMENT 24.—Left with trigone. A modification of the Maydl method was employed. An effort was made to reduce the number of stitches used and hence decrease the time consumed, and at the same time to lessen the liability of fecal fistula following, as has occurred in a number of otherwise successful cases on the human being. The following steps were employed in this procedure: 1. Removal of the trigone as in the Maydl method. 2. Bringing of the sigmoid into the abdominal incision. 3. An incision about 4 cm.—1½ inch—in length is made in the sigmoid. 4. The removal of the mucosa, by means of a curved curette, from the intestinal wall for a distance of 1 to 1.5 cm.—¼ to ½ inch—in all directions from the opening. 5. In the trigone three sutures are inserted, each armed with two needles, entering on the mucous surface of trigone. (See Plate IV., Fig. 5.) Two needles placed equally distant from the edge of the trigone and ureters, and one between the ureters. 6. The needles are inserted into the opening in the bowel, and are brought out, one on each side of the incision, near its superior and inferior angle, and one in the middle. 7. The trigone, having been folded in such a manner that its size is reduced to the least possible extent, is inserted into the bowel, through the opening made for it. 8. The six needles are removed and the three sutures tied. 9. The knots are covered by means of a Lembert suture. (See Plate IV., Fig. 6.) This method was put into effect only once, on an animal which had one ureter implanted by the "sleeve" method five weeks previous. The animal died on the second day. Necropsy revealed a diffuse peritonitis, probably due to infection at the time of operation. There was no leakage. The right kidney—first operation—showed a hydronephrosis, a greatly dilated sac, with but a rim of kidney tissue at its convex periphery. The right ureter was dilated to twice its natural size. There was absolute stenosis at site of implantation into the intestine, this point being but barely visible on the mucous surface of bowel. The left kidney was congested, but there was no dilatation of pelvis or ureter.

CONCLUSIONS.

The above table shows that twenty-four experiments were made; of these, one animal escaped, the result of which would in all probability have been a recovery, as it was an unilateral implantation, and the series shows that all unilaterals recovered. Of the remaining twenty-three experiments, five recoveries resulted, and in each instance with stenosis and hydronephrosis; this is practically a removal of one kidney. The result attained in the foregoing series of experiments, was not altogether unexpected.

The literature establishes beyond peradventure, that uretero-rectal implantation has been, and still is, a very unsatisfactory operation. Especially is this true in cases where both ureters are transplanted at the same time. The results obtained in experimentation on the lower animals are most discouraging. Matas, in speaking of Maydl's operation on dogs, considers the operation to be much more simple in the human subject, and less likely to be followed by septic infection. Contamination from the bladder or bowel can be much more effectually guarded against, especially if the sigmoid mesocolon is long enough to permit the bowel to be dragged out of the median incision.

Chaput is quoted as saying: "I believe that the difficulty in obtaining good results in these operations on dogs is due in part to the very small size of the ureter in the animal, and in part to the great rigidity of the intestinal walls causing the suture to cut through the tissues and rendering union almost impossible. The experiments on dogs therefore are not to be relied on to furnish material from which to draw valuable conclusions as to the advisability of similar operations on man."

In every instance where both ureters were transplanted, death followed in from two to six days, being due to peritonitis, with or without leakage.

In each instance where a single ureter was implanted at a first operation, the animals recovered from the operation without any bad symptoms, and passed urine per anum, or through the artificial bladder in the case which recovered after the making of such a bladder.

The animals in which the second ureter was implanted at a second operation, died, in a similar manner to those in which the bilateral implantation was done at one sitting. The cause of this peritonitis is difficult to arrive at.

All ordinary precautions were taken against infecting the peritoneal cavity. The same steps were pursued in the preparatory technic, in the same room, and with the same instruments, which were found to be absolutely safe by the same operator in performing intestinal work.

Again, the dogs in which one ureter was transplanted recovered without any signs of peritonitis, but when two ureters were made to communicate with the rectum by the same method and under exactly similar circumstances, the operation was followed by this inflammation of the peritoneum and death.

On necropsy, it was found that in all cases of unilateral implantation, stricture and hydronephrosis resulted. The fluid in the sac was never purulent, but on making cultures of this fluid cocci were found, with a few colon bacilli. In the other cases, when the post-mortem was performed within a reasonable time after death, cultures were made, and in each instance both bacilli and cocci were found to be present.

The ureter was implanted into both the large and small bowel, with apparently no difference in result. Unfortunately, the animals did not survive the operation for a sufficient length of time to allow that conclusions of material value be arrived at.

But from the above experiments, there can at least be deduced the conclusion, as confirmatory of others, that the bilateral axial implantation of the ureters into the rectum is at best a dangerous procedure.

Further experiments with the implantation of the trigone will be carried on and reported in the future.

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TYPHOID BACILLI IN THE URINE.

Not a few of the results of investigations that are made in the laboratory and at the bedside are of comparatively trifling value from the point of view of immediate results of a practical nature. From the standpoint of pure science, however, they may be worth much, and indirectly may lead to definite application in the ultimate aim of medicine, the prevention and cure of disease. In truth, much of our knowledge that is applied in the daily routine of medicine and surgery was obtained as the result of research undertaken with no thought or other incentive than the purely scientific one of discovering truth for truth's sake.

In the case of other facts that are announced as the result of scientific research, their applied working value is at once apparent, and they change not only existing theories but practice as well. Thus the discovery that typhoid bacilli are often present in the urine of patients ill with, or convalescing from, typhoid fever will be productive of great results.

The presence of typhoid bacilli in the urine of a patient ill with enteric fever is important, not only to the patient and his friends, but to the entire community in which he lives. It is important to the patient because it may mean a cystitis, a pyelitis, a prolonged convalescence or an imperfect restoration to health. Occurring as it does, in about 25 per cent. of cases, it should be carefully sought for by the physician, and every typhoid urine that is even slightly turbid, or that is voided with evidence of slight pain or local irritation, should be examined for bacilli. But this is not enough, for in many of these cases no evidence of the presence of bacilli is given by turbidity of the urine or disturbed act of micturition. In fact, subjective complaint is the exception. Typhoid cystitis, as shown by Curschmann, is relatively rare. The only safe way, therefore, is to examine the urine of every case, not forgetting that the organisms are often late in making their appearance and are seldom found before the third week. Their early detection and the proper treatment may save the patient from annoyance, and perhaps from something more serious, such as renal or vesical calculi, for the typhoid bacillus may, perhaps, play a rôle here as it does in the production of biliary calculi.

It is important to detect these cases, because of the great danger of spreading the disease by means of careless disposal of contaminated urine. Neufeld[1] has recently presented this aspect of the case with unusual force, and he contends that the danger from infected urine is greater than from feces similarly contaminated. This arises in part because a given quantity of urine will contain as a rule a larger number of typhoid germs than will a similar quantity of feces. In one of Neufeld's cases he estimated the bacilli at one hundred millions per cubic centimeter. But another reason is that an article of clothing, a sheet, a bed-pan, a urinal, the hands or genitalia may be soiled with urine and the accident much more readily escape notice than a similar mishap with fecal matter, thus increasing the danger of spread of the disease to those caring for the patient. From the point of view of public health the danger from improper disposal of typhoid urine is great. Water fouled with fecal matter will give evidence to sight or smell more quickly than if the contaminating substance is the nearly colorless and less malodorous urine. Urine is more apt to be carelessly thrown out than are feces; a patient recovered from typhoid, especially if he be in the country, is more likely to carelessly urinate than to defecate near a spring, well, brook, stream or pond, and thus to infect the drinking water. And the bacilli remain for a much longer time in the bladder and, therefore, in the urine than in the intestine and the feces. In Gwyn's case[2] they were found in urine voided five years after the attack of typhoid. There seems to be a constant inoculation and reinoculation of the urine as it comes from the kidney, by the organisms present in the bladder, so that the culture-medium being constantly supplied, the growth is repeatedly transplanted and is slow to die out. Thus a patient, months or years after his attack of fever, may unwittingly infect a supply of drinking water and start an epidemic of the disease.

In the management of these cases urotropin has been found to be very efficacious. Given in doses of about 30 grains a day, it causes the turbid urine rapidly to become clear and sterile. Occasionally relapses have been noted. If the bacteriuria is due to some other organism than the Eberth bacillus, the effect of the drug is not so certain.

1. Deutsche Med. Woch., Dec. 20, 1900.

THE TREATMENT OF EPILEPSY WITH OPIUM AND BROMID.

The essential nature and the intimate pathology of epilepsy are as yet not understood, and we are still without a specific or invariably successful method of treatment. In fact, all of the remedial measures at our command can be said to be only palliative, as even when the attacks have remained in abeyance for long periods of time, definite assurances of cure can not be given. In all cases distinct good can be accomplished by a careful regulation of the diet and the mode of life, and among drugs there is none, intelligently used, that seems so efficient as the bromids. The latter, however, by no means always bring about the desired result, and even when they lessen the number and the severity of

2. Johns Hopkins Hospital Bulletin, June, 1899.

the attacks, their use is not wholly unattended with unpleasant effects, and their influence may after a time be lost. Inasmuch as physiologic, as well as pathologic, activity, like all other forms of force, is expended along lines of least resistance, one is at times justified in taking radical steps for the purpose of breaking up what may be designated as the convulsive habit.

Within recent years a combination of opium and bromid, with various accessories, has been proposed in the treatment of epilepsy, but there has been some want of agreement as to the results obtained therewith. Meyer and Wickel[1] report a small series of cases thus treated, in which the severity of the attacks was mitigated, and both the physical and mental condition was improved. The underlying principle of the plan pursued consists in a gradual increase in the dose of opium, but not beyond 14 grains daily; in careful regulation of the diet; and in applications of cold water. Whether the patient has previously taken bromid or not, the treatment is begun with doses of 3/4 gr. of powdered opium thrice daily. This dose is increased 1/6 gr. on the third day, an additional 1/6 gr. on the fifth, and so on until, on the fifty-first day, the daily dose will be 14 grains. This maximum dose is given for but one day, being replaced on the following days by a mixture of bromids—potassium bromid, 15 gr.; ammonium bromid and sodium bromid, each 7½ grains—in doses of 30 grains thrice daily for two days; then 35 grains for two days, 40 grains for two days, and thereafter 45 grains thrice daily.

From the beginning a dilute solution of hydrochloric acid—1.5 to 200—is given thrice daily after meals in doses of a tablespoonful. In the diet, alcohol, coffee, tea, bouillon, sausage, acids, and strongly spiced articles, mustard, pepper, vinegar, and all spices are forbidden, and salt is restricted to a minimum. Meat is permitted in small amount, and the patient is encouraged to take demulcent soups, eggs, rice, etc., and if constipation be present, fresh vegetables. The diet must be regulated somewhat by the surroundings and the circumstances of the patient. During the first period of bromid administration, cocoa, eggs, and scraped meat, may be added.

From the first day of the period of opium administration a cool bath is taken in the evening before eating, at first at a temperature of 86 degrees for ten minutes, and reducing the temperature 2.25 degrees, and the duration of the bath one minute daily until a temperature of 70 and a duration of three minutes are reached. The baths are thus continued for a week, then, with the same temperature, but for four minutes, for another week; next at the same temperature for five or six minutes. In the first week of the period of bromid administration the bathing is intermitted, then being resumed at 86 for ten minutes and following the course already laid down. Every third day the patient is weighed, and pulse, temperature and respiration carefully observed. The bowels must be kept regular by means of enemata, infusions, abdominal massage, but not purgatives; besides note is taken of the number of attacks and of other details of the patient's condition.

The most important contraindications for the treatment are serious impairment of the nutrition and weakness of the heart. The number of attacks is not diminished during the period of opium administration; it may even be increased. Subsequently, however, the attacks become less frequent, and during the period of bromid administration they cease altogether. The mental state also exhibits distinct improvement. The treatment is to be continued by the administration of large doses of bromid—if possible 2 drams daily—for at least a year, with a tablespoonful of the solution of hydrochloric acid—1.5 to 200—thrice daily, and the same diet as was used during the period of opium administration, avoiding especially alcohol, tea, coffee, spices and meat beyond moderation. A quiet mode of life and avoidance of physical and mental excess, especially excitement, are further conducive to the success of the treatment.

1. Berliner Klin. Woch., 1900, No. 48, p. 1085.

THE EDINBURGH TRADITION AND CLINICAL INSTRUCTION.

In an address entitled "The Edinburgh Tradition and other Topics," Adami[1] emphasizes the great value of bedside teaching, more especially as carried out in the hospitals in Montreal, and he discusses the question why this method has been practiced so long in Montreal, while "elsewhere on the continent until recently clinical instruction and the free entry of students into the wards have been most exceptional?" "The democratic air of the states" is not considered adequate to explain the difference. The fact that many hospitals secondarily became attached to medical schools has been one cause, without doubt, of the opposition to the entrance of students into the wards. In Montreal the founders of the hospital and the earliest members of the staff were likewise the founders of the medical school, and they endeavored to exemplify in the new institutions the traditions of their youth. The Montreal school was developed by men from Edinburgh, and they continued the "Edinburgh tradition," that is, introduced the scheme of teaching in vogue for some time in Edinburgh. The men who founded the Montreal medical institution in 1823, and who became the medical faculty of McGill in 1829, were all Scotch. The Toronto school and the older schools in the United States were founded by English graduates. In London there was no regular instruction in the wards of hospitals until 1808. The Edinburgh school was well developed in 1750, and it was years in advance of London schools in the important matter of bedside instruction.

Adami quotes, from an old volume, notes showing that in 1780 there was in Edinburgh a well-developed

1. Montreal Med. Jour., 1900, xxix, 559-570.

system of practical clinical instruction. Gregory, Hume, Duncan, and other Edinburgh teachers, at the beginning of the nineteenth century, taught the men who in Montreal inaugurated a system of ward work that has given the McGill school an important standing on this continent. From this school have come men who have carried this tradition with them to other medical schools. This is an excellent illustration of the great influence that methods of instruction may exercise in the development of institutions. The influence of teachers and of methods of teaching go farther than merely to the present generation of students. As these scatter they are bound to carry with them the traditions and methods of their teachers. Hence the fundamental importance of guiding prospective medical students to those institutions whose methods and standards must be considered the best from the present point of view.

"The democratic air of the States" has something to do with the establishment of proper methods of clinical instruction in our large public hospitals, in so far as the management of these institutions is after all an accurate index, not of any one class a little more intelligent than the rest, but of the main mass of the people. Wherever these institutions are managed according to the expediency of practical politics—and many of them unfortunately are so managed as yet— there the true interests of medical education are sure to suffer in some way or other. But perhaps more harm is done our medical students by the democratic air of the medical colleges themselves, many of which feel free to offer courses in medicine without any facilities whatsoever for adequate clinical instruction, giving no consideration to the lessons taught by the history of medical teaching in this and other countries. A conservative regard for traditions surely would have prevented the starting of medical schools under conditions that prevent them from being such otherwise than in name.

METHODS OF EXAMINATION BY STATE BOARDS AND HOSPITALS.

The various state boards and licensing bodies are entrusted with the important duty of determining to whom shall be granted the right to practice medicine and surgery. For this purpose examinations are held. As far as known all examinations of this kind are written; a series of questions are propounded in the various branches, the applicants write the answers, the papers are corrected and graded by the members of the examining body or their representatives, and if the marks when added reach a certain average, the necessary papers are granted. In practically all states the applicants for license must present evidence of having satisfactorily fulfilled certain requirements and conditions before they are admitted to the examination. In the majority of the states demanding special examination these requirements include graduation from a medical college, and many states specify the colleges whose diplomas are "recognized" for this purpose. One of the weak points in this machinery is the character of the examination. Written examinations alone do not furnish the requisite basis for determining whether the applicant is a proper person to be given the right to practice even though he holds a diploma from a recognized college. The most that a written examination can do is to show something as to the degree of book-learning possessed by the applicant. No really satisfactory opinion of the practical training and practical knowledge attained by those examined is secured by this method. An applicant may be able to tell all about acute lobar pneumonia without ever having seen or studied a single actual case of the disease. He may describe with great fulness of detail the management of a serious case of labor without ever having seen the inside of a lying-in chamber. He may give the steps in the examination of sputum for tubercle bacilli without the slightest practical experience in clinical microscopic diagnosis. Much of the knowledge that is paraded in the written examinations may be of very recent acquisition, and undoubtedly it often is the result of a hasty process of cramming with the particular end in view of passing the examination.

It may be urged that the holding of a diploma from a recognized medical college guarantees a certain amount of practical fitness to engage in active professional work. Graduation from the better schools probably does. In some of the better schools practical examinations are now in vogue. But what significance in this line is to be given the diplomas of the much larger number of institutions without adequate equipment and with notoriously low standards? In order to remedy this serious defect in the state examinations their scope must be enlarged so as to include practical tests. Patients should be examined, diagnoses made, and treatment prescribed for the concrete actual case by the applicants. Practical laboratory manipulations, such as are used every day by the properly qualified practitioner, should be introduced as part of the examinations for license to practice. This is done in other countries and is done in the examinations for appointment to the medical corps of the U. S. Army and U. S. Marine-Hospital Service. Certainly the hospitals and public medical institutions of every state contain suitable materials for this purpose. And the examining boards surely can command the services of men competent to properly carry out the necessary tests. Examinations of this kind would be actual tests of the qualifications of those that apply for the right to practice. In the framing of new laws and the amendment of existing laws governing admission to practice in the various states this necessary improvement should be incorporated, if not practicable under the old rules, as it is plainly one of the next steps in the evolution of state regulation of medical practice.

The foregoing is applicable with additional force to hospitals that choose internes by competitive examination. Here it concerns not the mere grading of the applicants, but the more difficult problem of determin-

ing relative merit. The adequate solution of this problem demands practical examinations; for the competitor who possesses an equal amount of theoretical knowledge but greater practical training than his fellow-contestants is the one most worthy of appointment to the coveted position. In this way only can the best men be selected.

Practical, not theoretical, knowledge should be the qualification required. A man with a little book-learning and a good memory is on top under the present system; the man with brains, and with practical knowledge but without the ability to put it in words, is liable to be at the bottom.

WASHINGTON'S GOVERNOR AND MEDICAL PRACTICE.

The Governor of Washington has vetoed a medical practice act that passed the legislature, because it ruled out the osteopaths. The use of drugs, he claims, is the ruin of the race, and "the osteopaths are perhaps showing us a better way." It is a pity that a man has been elected to such high position, whose mental qualifications are such that he can not see the difference between legitimate medical practice and indiscriminate drugging, and no recourse from the latter but osteopathy or similar forms of quackery. He accuses physicians of "poisoning the springs of life," and calls "the contents of the drug-store perhaps more dangerous to the future well-being of the race than those of the saloon," this last being perhaps a politician's sop to the liquor trade. The spirit, however, of the extracts of the veto message that have been published, is generally that of a sanctimonious quack, who thinks he can libel an honorable class of fellow citizens with impunity from his official position. The members of the profession of the state of Washington should remember this insulting message, and like those of Colorado, previously mentioned in these columns, put an extinguisher upon the future political aspirations of their libeler.

MARK TWAIN AND OSTEOPATHY.

Some time ago the public was edified by the sensible humor and sarcasm of Mark Twain on the subject of "Christian Science." It is too bad that he, like other mortals, has his share of unwisdom, which he exhibits in recent remarks credited to him, endorsing osteopathy in particular and unlimited license in medical practice generally. He has lived so long abroad, it would seem that he is peculiarly jealous of personal liberty in America, a peculiarity often noticed in other individuals from foreign lands. His long residence in Vienna, where he apparently found matters temporarily satisfactory notwithstanding the police and other regulations, has apparently given him an appetite for license that he wants indulged. The state here, he says, stands for liberty, and without full freedom for osteopathy things would be as unsatisfactory as the garden of Eden was to Adam and Eve; people will want what they can not get. The comparison is not such a bad one, and the medical profession will not object if this view of the case, including the consequences, is considered by the legislators before whom he appeared in behalf of the frauds. Mark Twain is clearly a man with a somewhat kinky intellect, but it hardly seems that he will be taken seriously in his argument in behalf of those masseurs who call themselves osteopaths.

CALIFORNIA AND CHRISTIAN SCIENTISTS.

We were aware that the California legislature has had some queer propositions before it in the form of bills, and it therefore does not cause much surprise that it has followed the lead of some other state legislatures in putting "Christian Scientists" on an equality as regards medical practice with other recognized schools of medicine. The chief arguments that affected the intelligent legislators were that these scientists were a numerous and good class of people, which, as the *Sacramento Bee* says editorially, "would have been as pertinent regarding a bill enabling the inmates of the various lunatic asylums of the country to practice medicine." As that paper says, "it is doubtful whether the intelligent legislators who advocated and voted for the bill ever read any of Mrs. Eddy's books, or even know who she is"; and it gives for their benefit a little brief account of the "profitess" and her doctrine, that ought to enlighten them. It would be well if every legislature had near at hand so able and sensible an adviser on medical matters as have the California Solons in the *Sacramento Bee*.

THE DETERMINATION OF SEX.

Some day, perhaps, we may fully understand the mechanism underlying the determination of sex, but at the present time we must acknowledge the existence of certain deficiencies in this respect. Many hypotheses have been proposed, but no one satisfies all of the conditions, although each may contain some element of truth, and be based on the observation of some actual factor. Even apart from this circumstance, however, it seems probable that the process is not a simple one, but is dependent on a complexity of influences, at least some of which have been individually pointed out. On the basis of general knowledge, it seems probable that each parent contributes something in the determination of the sex of the offspring, and it appears likely that the final determining factor must be referred to some peculiarity in nutrition, affecting the spermatozoid, the ovum or the embryo, alone or severally. From this point of view, the hypothesis of Schenk would be most acceptable, though even it must be considered as crude and not sufficiently comprehensive. At a recent meeting of the Obstetrical Society of London, Dr. E. R. Dawson[1] read a paper on "The Essential Factor in the Causation of Sex," in which he took the ground that each ovary normally discharges ova independently of and probably alternately with the other, normal single pregnancy resulting from the fertilization of an ovum from one ovary only by the combined secretion of both testicles, the male parent thus not influencing the sex of the child, which depends rather on the ovary that supplies the ovum fertilized: if the right, a male; if the left, a female. Illustrative cases were cited in support of the view propounded. In the case of plural

1. British Med. Jour., Dec. 15, 1900, p. 709.

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births, the sex of the children would be the same or different, accordingly as the fertilized ova were derived from one or both ovaries. Apparent exceptions to the rule were ascribed either to the grasping by the tube on one side of the ovary on the other side, or to the transmigration of ova. This hypothesis is not entirely new, nor probably is it correct. It seems most unlikely that the spermatozoid should be wholly without influence in sex determination, and it is scarcely more likely that what might be designated the accident of the situation of the ovary on the right or left side should have any decisive influence in this connection. As a matter of fact, some animals possess but a single ovary.

NEW SPECIFIC BLOOD REACTION.

A discovery of some importance from a medicolegal point of view is announced from Germany. Uhlenhuth[1] has found that by repeatedly injecting rabbits with defibrinated blood from various animals, a serum can finally be obtained which gives a specific turbidity with samples of the blood of other individuals of the same species. The blood samples to be tested must be diluted with water, to a pale red color, filtered or cleared by precipitation, and then have an equal amount of 1.6 per cent. solution of common salt added. This last is important, as without it the rabbits' serum gives, with water, a turbidity that might be confusing. Uhlenhuth has tested this reaction with human blood as well as with that of other animals, and in all cases obtained the specific reaction, the rabbits' serum failing to produce turbidity with any sample not taken from the species of animal from which it was inoculated. The test, moreover, is one of exceeding delicacy, the merest traces of blood serving to identify the animal from which they came. A specimen of dried stain on a board from a human being, ox, or horse, four weeks old, was enough when dissolved in salt solution. As regards the nature of the reaction, the author suggests the existence of a specific "coagulin" formed in the body, but whatever further research may prove so far as this is concerned, the importance of the discovery itself is manifest. It is to be hoped that this work will be followed up and confirmed by other workers.

THE YELLOW FEVER GERM.

There appears on another page the substance of the "interim report" of Dr. H. E. Durham and the late Dr. Walter Myers, the British yellow fever commission that has been investigating this disease in South America. Their discovery of a new claimant for the "germship," so to speak, of yellow fever, is an interesting addition to the sum of facts on the disease. The report was prepared before the authors had received any accounts of the later experiments of the American investigators in Cuba, as they remark that the man-to-man transference of yellow fever by a mosquito is hardly intelligible for bacillary disease and that it "does not seem to be borne out by the experiments." The incontestable evidence offered by Drs. Reed,[2] Carroll and Agramonte was evidently unknown to them, and it certainly does not specially favor a bacterial theory of the etiology. The American experimenters offer no positive theory as to the actual germ, however probable it might appear, from their results, that it is a protozoan, but as the case stands the conclusion that yellow fever is not due to such an organism can not be implicitly accepted. Nevertheless, the findings of Durham and Myers are to be taken as part of the sum of facts that is needed before the questions are solved, and they may have important side bearings on their solution. Like the American studies, they have cost a valuable life. Dr. Myers, like Dr. Lazear, is to be enrolled among the physicians who have sacrificed themselves in the search for knowledge that is needed for the good of mankind.

1. Deutsch Med. Woch., February 7.
2. JOURNAL A. M. A., February 16.

NEW HAMPSHIRE'S VITAL STATISTICS.

The Sixteenth Annual Report of the New Hampshire State Board of Health contains some interesting data regarding causes of death in that state, which are not altogether in accordance with prevailing notions as to the mortality. For example, consumption, which is as a rule considered to stand at the head of fatal diseases, falls from first to second place in 1898 and to fourth in 1899, pneumonia, heart disease, apoplexy and paralysis exceeding it in the number of their victims. Moreover, while it has held first place every other year since that state has had any accurate system of registration, excepting in the year 1892, there has been a steady decrease in its fatality, from 24.18 per 10,000 living population in 1884 to 14.43 in 1899, and its percentage of the total mortality has fallen from 14.01 to 8.26. This decrease also begins to appear from the first and before the microbic origin of the disorder was generally recognized, and therefore can only in part be attributed to special precautions based on that knowledge. The State Board is inclined to credit the decrease of mortality from this disease largely to better sanitation, ventilation, etc., of late years, as well as to the dissemination of information regarding it, in which it has been especially active of late. Pneumonia, on the other hand, is a disorder that has an increasing, as phthisis has a decreasing, mortality, and this is particularly aggravated in certain years by the prevalence of influenza. The average death-rate from pneumonia, between 1884 and 1899 inclusive, is 61?, but this has been exceeded every year but two since 1889. The increase in mortality from cardiac and nervous disorders is likewise notable, the number of deaths from the former, prior to 1893, having been between 400 and 500, while since that date between 600 and 700 have been annually recorded. Of nervous diseases collectively, the average mortality for the past sixteen years has been 949, with a gradually increasing proportion, till in 1899 the deaths from these causes reached a total of 1111, the highest ever reported. Cancer statistics, contrary to experience in some other regions, have been remarkably uniform, with an annual average somewhere between 200 and 300. New Hampshire is supposed to be a typical New England commonwealth and, therefore, its statistics are of special interest. It has, however, few large towns, and its population is more largely rural than with its southern neighbors, which fact is to be considered. The decreased mortality from consumption is both welcome and significant, and the increase in that from pneu-

monia is in accordance with experience in some other sections. While the influenza epidemics of 1890 and 1899 may have had their influence, the increase was, from the figures, already apparent before the earliest of these dates. It seems not altogether unlikely that, with greater care, largely in personal hygiene and general sanitation, the "great white plague" may permanently take a less prominent place in the list of scourges to the human race, but new questions and diseases will then arise, and pneumonia, carcinoma, cardiac and nervous and other disorders appear in our mortality lists with more formidable frequency. Probably the sanitary golden age is still almost as far in the dim future as ever.

Medical News.

CALIFORNIA.

Sanitary inspectors are now detailed by the State Board of Health to inspect all incoming trains from the South and East, at Oakland.

Merritt Hospital, Oakland, is to be located on a site—about 5½ acres on Hawthorne Avenue—secured by the trustees of the hospital.

CONNECTICUT.

Yale Medical School, New Haven, has received an anonymous donation of $100,000 which is to be applied to the construction of a clinical building—a laboratory of clinical medicine and surgery.

Dr. William R. Tinker, South Manchester, has been appointed by the coroner of Hartford county, medical examiner for the town of Manchester to fill the vacancy caused by the death of Dr. Julian N. Parker.

The State's death-rate for January was 19 per 1000 per annum. Infectious diseases caused 16.4 per cent. of the deaths, which numbered 1439, or 173 more than the average for the month for the five preceding years.

Incipient tuberculosis is to be treated in a state institution, especially provided, if a bill introduced in the legislature becomes a law. The bill, which has received the unqualified support of the New Haven Medical Society, provides for the establishment of a state hospital in some suitable locality for the treatment of incipient pulmonary tuberculosis, and appropriates $100,000 for the purchase and the erection of buildings.

DISTRICT OF COLUMBIA.

An unlicensed practitioner has been arrested at Washington, while passing under an assumed name, for practicing medicine without a license.

Tributes to deceased members of the Medical Society of the District of Columbia—Drs. Rosier Middleton and William P. Manning—were presented and adopted at a recent meeting of the Society.

Emergency Hospital changes include the appointment of Dr. Clifford Spiro as resident physician, vice Dr. W. R. Moulden; Dr. R. S. Beale, promoted to senior assistant, and Dr. Boyd Dixon, appointed junior assistant, as the result of a competitive examination.

An Examining Board consisting of Col. Alfred A. Woodhull, assistant surgeon general, U. S. A., Major Louis A. Le Garde, surgeon, U. S. A.; Capt. William C. Borden, assistant surgeon, U. S. A., and Capt. Frank R. Keefer, assistant surgeon, U. S. A., designated by the Secretary of War, met at Washington, February 11, to examine candidates for admission to the medical corps of the army. Medical boards have been ordered to convene at San Francisco and Manila, P. I., for a similar purpose.

ILLINOIS.

Dr. William Jayne, Springfield, has been appointed a member of the State Board of Charities, vice R. D. Lawrence, deceased.

Senator Busse has introduced a bill amending the inheritance tax law by providing that when beneficial interest passes to a hospital or other charitable institution, it shall not be subject to tax, but that the exemption shall not apply to institutions operated for profit.

Chicago.

Dr. Frederick C. Schaefer has been appointed gynecologist to St. Elizabeth's Hospital, and surgeon-in-chief to St. Hedwig's Hospital.

Dr. John H. Reeves, who was one of the defendants in the fraudulent insurance case, in which Dr. Michael N. Regent was recently convicted, has turned state's evidence and will testify in the third trial which is now in progress.

The deaths for the week ended March 2 were 434, or 87 fewer than the preceding week, and 103 less than the corresponding week of 1900. As compared with the corresponding period of a year ago, there were 68 fewer deaths from the acute pulmonary diseases and from diphtheria. There were only 9 from diphtheria during the week, as against 32 a year ago. Of these deaths, 165 were due to diseases of the respiratory system.

A coroner's jury has decided, in the case of a decedent who fell, breaking five ribs, and was given treatment by the Dowie method, that if medical aid had been rendered the deceased he would have recovered from his injuries and would certainly have been spared the physical agonies he suffered. It also recommends that a law be enacted which will compel medical examination by licensed physicians in cases of accident or external violence.

The smallpox situation is substantially unchanged; of 21 "suspect" cases reported, 11 were found to be smallpox and were removed to the Isolation Hospital, their premises were quarantined and disinfected, and all persons in the respective neighborhoods were vaccinated. Since the ripening of the vaccin lymph, systematic vaccination of the lodging-house districts has been resumed. At the close of the week there were 35 cases under treatment in the hospital, 9 had been discharged and none died.

February Mortality.—The total deaths for February numbered 1933, giving an annual death-rate of 14.32 per 1000, as against an annual rate of 15.21 per thousand for February, 1897. As compared with the preceding month there were 307 fewer deaths during February, and as compared with the corresponding month of a year ago there were 172 fewer. The reduction was chiefly in the deaths from pneumonia, bronchitis and influenza, there being 184 fewer deaths from pneumonia, 41 less from bronchitis, and 54 less from influenza, a total of 279 from these three diseases. There was also a lesser mortality from cancer, typhoid fever, diphtheria and from violence.

INDIANA.

The Wood medical bill, with an amendment excluding practicing osteopaths who are graduates of regularly constituted osteopathic schools, passed the senate, February 21.

Indiana deaths for January numbered 3400, 602 more than for January, 1900. The tuberculosis mortality increased 23 per cent. over the previous month, and respiratory diseases and measles and puerperal infection were more prevalent.

The Methodist State Hospital, Indianapolis, will be built on Twenty-ninth street, near Illinois, as soon as the executive committee secures subscriptions sufficient to warrant beginning the work. The intention is to begin with a small building and to enlarge as the needs of the institution increase.

IOWA.

Dr. Alpheus A. Deering, Boone, while on a trip in California, fell and broke his leg, February 18, and is now under treatment at Palo Alto.

The Cedar Valley Sanatorium has been established and will soon be opened at Cedar Rapids, under the medical directorship of Dr. George D. Sitzer.

Smallpox in the county jail, Des Moines, has caused the abandonment of the courts and county offices located in the building, and the quarantining of the entire structure.

KENTUCKY.

The Kentucky State Medical Society will hold its forty-sixth annual session in Louisville, May 22, 23 and 24.

Free public baths for Louisville have been reported on favorably by the committee of the board of aldermen and $5000 appropriated for the purpose.

Dr. E. C. Dudley, of Chicago, was the guest of Dr. William H. Wathen, Louisville, February 25, and held a clinic in the hospital of the Kentucky School of Medicine.

The formal opening of the hospital for the medical department of the University of Louisville occurred February 21.

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The hospital is already in successful operation, and has accommodation for about fifty patients.

LOUISIANA.

The medical department of the New Orleans University (colored) held its annual commencement, February 26, graduating two.

A quarantine proclamation was formulated by the State Board of Health, February 25, governing all vessels engaged in the fruit-importing trade.

Fifty thousand dollars has been donated the Charity Hospital, New Orleans, by some unknown philanthropist, through Dr. Rudolph Matas. It was given unconditionally, for the purpose of increasing the nursing staff in the hospital and providing a suitable building to be used as a trained nurses' home.

Charity Hospital.—At the annual meeting held February 4 the Charity Hospital, New Orleans, elected the following officers: Dr. Ernest S. Lewis, vice-president; Dr. Jefferson D. Bloom, house surgeon; Dr. Erasmus D. Fenner, first assistant; Dr. James M. Batchelor, second assistant; Dr. Oliver L. Pothier, pathologist, and Dr. Maurice J. B. Couret, assistant pathologist.

Appointments.—The State Board of Health has appointed Dr. Fred Turney, Rigolets Station, and Dr. George H. Douglas, Atchafalaya Station, quarantine physicians, and the following as resident medical inspectors: Dr. J. L. Fridge, Belize, British Honduras; Dr. Augustus Smith, Livingston, Gautemala; Dr. J. S. Allison, Port Cortez, Spanish Honduras; Dr. King Holt, Bluefields, Nicaragua; Dr. Percy Ahrons, La Ceiba, Spanish Honduras; Dr. Allen Jumel, Port Limon, Costa Rica; and Dr. L. A. Wailes, Bocas del Toro, United States of Colombia.

MAINE.

The State Hospital at Augusta, which has a capacity of 500 insane, now has 767 such patients.

Dr. E. H. Wheeler, Camden, has been appointed assistant surgeon in the U. S. Volunteer service, with rank of captain.

Dr. Philip H. S. Vaughan, Augusta, has been selected as assistant superintendent of the Eastern Maine Insane Hospital at Bangor.

The State Medical Association, on account of the conflict of dates with the meeting of the AMERICAN MEDICAL ASSOCIATION, has changed the time for its annual session to June 12-14.

MICHIGAN.

Deaths in Michigan, for February, numbered 3173 or 498 more than for the preceding month. The increase is assigned to the prevalence of pneumonia and influenza.

The Semicentennial of the medical department of the state university was celebrated February 22. Dr. William F. Breakey, Ann Arbor, spoke on "Medical Education in the Early Fifties," and Dr. Victor C. Vaughan, dean, considered the ideals of the medical department.

Smallpox Infected Mail.—The State Board of Health has received a report from a health officer giving an instance where smallpox was apparently contracted by the handling of infected mail. There is but one case of the disease in that city, and that person has not been away from the city; he has been distributing mail, and the health officer suggests that as the mail carriers, when sorting mail, moisten their thumbs in their months, the only probable source of the disease is some infected letter handled in that manner.

MINNESOTA.

Bethesda Hospital, St. Paul, reports receipts of $132,291 for the nine years of its existence, and $79,944 disbursements. The buildings are valued at $56,990.

Dr. Samuel Friedlander, Minneapolis, who sued for $5050 for false arrest, and damage to his reputation as a physician and citizen thereby, was awarded $175 damages, February 20.

MISSOURI.

Dr. Thompson E. Potter, St, Joseph, was seriously injured in a runaway accident, February 24.

Dr. E. Victor Wedding, Kansas City, who was sued by a patient, for $2000 for alleged malpractice, had a verdict rendered in his favor, February 14.

Dr. Robert L. Evans, Boonville, has been made a member of the Cooper County court, under the provision of the new law which makes the county court ex-officio members of the State Board of Health.

NEW JERSEY.

Vaccination is progressing rapidly at Woodbury; the two cases of smallpox are doing well, and the health board does not anticipate any further spread of the disease.

Muhlenberg Hospital, Plainfield, has been given a site for its new building, with 500 feet frontage and a depth of 300 feet, by James A. Martine. The land is valued at $10,000.

Friction between the house staff and the superintendent of the Orange Memorial Hospital has culminated in the resignation of Drs. Frank H. Glazebrook and Henry P. Merrill, February 25.

Christ Hospital, Jersey City, in its twenty-seventh annual report shows that 4633 patients were cared for, 1171 of whom were bed patients in the hospital. The mortgage debt was reduced $3000 during the year.

NEW YORK.

Subscriptions to the Ogdensburg City Hospital annex already amount to $15,500.

The Craig Colony for epileptics now has 620 patients, and with the completion of the four new buildings now under construction, 120 more can be received.

Buffalo.

Dr. Matthew D. Mann has been elected park commissioner.

Dr. W. Scott Renner sailed for Europe March 6, to spend two months in Berlin and Vienna.

Dr. P. W. Van Peyma has been elected chairman of the board of school examiners for the year 1901.

The Emergency Hospital, which is supported by the Sisters of Charity, will soon remove into its new building.

Dr. John Farr, formerly of Buffalo, has been appointed an assistant surgeon in the army. Dr. Farr was for some time house surgeon at the Fitch Accident Hospital.

New York City.

The Post-Graduate Medical School and Hospital has received an anonymous gift of $15,000, to endow three beds in the children's ward.

The nurse in Bellevue Hospital who was charged with manslaughter, in having caused the death of one of the insane patients, has been acquitted.

Early in March, the first number of a scientific quarterly, under the title *New York University Bulletin of the Medical Sciences,* edited under the auspices of the New York University Medical Society, will be published.

Appointment.—The governor has appointed Dr. Daniel Lewis, former member of the State Board of Health, state health commissioner under the new law. He will have jurisdiction over the matters formerly coming under the notice of the state board. The salary is $3500 a year, and his term expires Dec. 31, 1904.

New Periodical.—The annual circular of the New York University is to be converted into a periodical, each number of which will contain, besides the circular matter, statements of recent progress in the university. This bulletin will be issued twice a month, except from August to December.

Smallpox.—New Cases of smallpox continue to be recorded. A public school teacher in Manhattan has just been reported with the disease, and two centers of smallpox have been unearthed by the health officials in Brooklyn. Eight cases were discovered in a row of tenements in Warren Street, and eleven smallpox patients were found in a four-story double apartment house in Driggs Avenue.

Hemophilia.—Elmer W. Roach, of Brooklyn, a student of dentistry, has died after three weeks of almost continuous bleeding from the nose and gums. This case of hemophilia is of special interest because Mr. Roach had reached the age of 22 years, and because about nine years ago he lost a leg in a railroad accident. If he had been a "bleeder" at that time he could not have survived the injury.

OHIO.

The estate of the late Dr. Alexander Neil, Columbus, valued at $150,000 is to be distributed equally among his three daughters.

Dr. John L. Boylan, Milford Center, fell from the roof of his barn, February 22, breaking two ribs and receiving other injuries.

Dr. Robert C. M. Lewis, Marion, formerly surgeon for the T. and O. C. R. R., has been appointed surgeon for the C., S. and H. R. R.

The vacancies on the medical staff of the National Military Home, occasioned by the resignations of Drs. Beal and Miller, have been filled by promoting Dr. Edward S. Breese to be first assistant surgeon; Dr. George H. Kress, second assistant; Frank W. Roush, third assistant, and A. L. Light, fourth assistant.

PENNSYLVANIA.

A conference has been held for the purpose of making a new annex to the Allegheny City Home for the Insane at Claremont. The new annex will cost about $120,000.

The pathologist to the Hospital for the Insane, at Norristown, will be compelled, hereafter, to examine the cattle at that institution in order to prevent tuberculosis, as certificates given by drovers are unreliable.

Drunkards Insane.—A resolution has been introduced in the house of representatives providing that persons of aggravated intemperate habits, be placed in an insane asylum until they are cured, and that they be recommitted in case of recurrence.

Philadelphia.

Dr. S. Weir Mitchell will leave for Vancouver, about March 15, and later go to Japan, returning in June.

Dr. Francis R. Packard has assumed the editorship of the *American Journal of the Medical Sciences*, to succeed Dr. Alfred Stengel, resigned.

The coroner's jury a few days ago recommended that the licenses of two women physicians be revoked, because they were conducting private maternity hospitals at their respective homes.

President Shoemaker, of the Pennsylvania Hospital, has appointed Messrs. John B. Garrett, and John Story Jenks, Dr. John B. Chapin, and Dr. Thomas G. Morton, a committee to make arrangements for the 150th anniversary of that hospital, to be held early in June.

GENERAL.

Honolulu's Board of Health has directed the attorney general to draft a bill, for presentation to the next legislature, prohibiting the landing of any persons suffering from any contagious and infectious disease. The bill is aimed especially at lepers and consumptives.

Congress of Nurses.—The International Congress of Nurses is to be held in Buffalo next September, for the purpose of strengthening the national and international organizations which the nurses of this country, Great Britain, the British colonies, Denmark, and Holland have been developing during the last few years. The nurses' national organizations in all these countries are pledged to work steadily for the advancement of educational standards and ethical development, and those of English-speaking countries also have in view the attainment of state examinations and registration. The organization in the United States is affiliated with the National Council of Women, and within the last year an international council of nurses has been organized, and will hereafter hold quinquennial meetings with those of the International Council of Women. The chairman of the congress is Miss Isabelle McIsaac, of the Illinois Training School for Nurses, Chicago, and the secretary, Miss Banfield, of the Polyclinic Hospital, Philadelphia.

California Plague Investigation Ended.

(Special Telegram from Our Own Correspondent.)

SAN FRANCISCO, CAL., March 7, 1901.—The Federal Commission, which, as recently noticed in THE JOURNAL columns, has been making an investigation of the plague conditions in San Francisco, has completed its work and its members left for the East on March 5. Inoculation experiments have been performed in all of the following cases and showed the positive presence of plague in every instance, these cases having occurred in San Francisco during the investigation of the Commission. In brief, these cases, which bring the number previously reported in THE JOURNAL to thirty-two, are as follows:

CASE 26.—Chun Ah Chon, a male actor, 44 years old, born in China, died February 5, at the Chinese theater on Washington street.

CASE 27.—Lum Hong Yuen, a male laborer, aged 37 years, born in China, died at his residence, 28 Ross alley, February 6.

CASE 28.—Wong Chi Lin, a male, aged 50 years, a cigarmaker, born in China, and residing at 15 Waverly Place, died February 7.

CASE 29.—Tom Shom, a male actor, aged 51 years, died at his residence, 814 Washington street, February 10. This case was under observation by the commission for three or four days before his death.

CASE 30.—Ny Ah Bock, a male, 45 years old, died February 11, in St. Louis Alley. This case was attended by Dr. Mather, of San Francisco, and by him reported as suspicious. Glandular enlargement was found in the neck in this instance, and at the autopsy, which was performed by Prof. Simon Flexner, of the commission, the spleen was found very much enlarged, septic, the lymph glands of the neck much enlarged, hemorrhagic, and necrotic. Plague bacilli were found in enormous numbers in both the spleen and glands.

CASE 31.—The details of this case are not yet completed.

CASE 32.—Fong Lung Why, a male cook, 33 years old, was born in China. He died at his residence, 13 Waverly place. This man came from Sacramento about two weeks before death, and was sick when he arrived. There was no enlargement of the superficial lymph glands, but the spleen was much enlarged, septic, and contained enormous numbers of plague bacilli. The organism was obtained in pure culture from the spleen.

CANADA.

The Montreal Medical Society, consisting of French members, discussed and considered at the last meeting, the question of a new civic hospital for Montreal. The society favors a single hospital under the direct management of the city.

Dr. M. S. Frazer, of Brandon, Manitoba, one of the delegates to the tuberculosis conference recently held in Ottawa, and connected with the Indian department, as the medical superintendent of the Brandon Industrial School, will make a report on tuberculosis as it affects the Indians, so that the department may take any steps necessary to prevent this disease.

Ontario's Smallpox.—The situation in the province as regards the spread of smallpox is a trifle alarming. There are 3 cases in Toronto, all progressing favorably, and 83 in the province. In the County of Algoma there are 57; Carleton and Norfolk, 1 each; Middlesex, 2; York, Simcoe and Muskoka, each 3; Renfrew, 11; Haldimand, 1. The provincial board of health has organized a smallpox camp at Sudbury, where there are said to be 17 cases.

Sherbrooke Medical Society.—At the annual meeting held last week, Dr. J. F. J. Austin was elected president and Dr. J. O. Camirand, secretary-treasurer. The "lodge-doctor" was the principal topic of discussion and the Society decided to adhere to its previous decision, each member pledging himself to accept no position from any society as lodge physician. Another question was the relation of the doctors and druggists in the matter of counter prescribing, and it was decided to hold a conference in the near future, with the druggists of the city, to discuss the matter.

Injured in Chemical Laboratory.—An unfortunate accident occurred in the laboratory of Professor Ruttan, of McGill's faculty of medicine, recently, and will probably result in the partial blindness of a first-year medical student. The accident occurred through the unexpected explosion of a quantity of sulphuric acid and alcohol with which the students were experimenting. The test-tube of a neighboring student was submitted to Shaw's nose for his opinion as to the nature of the gas being given off, when it frothed up in his face, terribly burning it and also permanently injuring the right eye.

Indian Girls as Nurses.—The department of Indian affairs is considering the advisability of training girls at the industrial school at Brandon, Manitoba, in general nursing. This has been recommended by Dr. Fraser, who has the medical supervision of the institution. The value of having Indian female nurses in the Northwest can not be doubted, as the doctors are in many instances some distance from the Indian reserves, and it is also thought that the training of these girls would be in this way an education in the matter of preventing the spread of consumption amongst the Indians. Trained nurses will be brought to Brandon to train and instruct the female pupils in this work.

FOREIGN.

The hospital connected with the Tokyo University, Japan, according to mail advices just received, was burned January 29. Twenty-one patients were burned to death and ten patients and eleven nurses and attendants injured.

Smallpox in Dawson has abated, according to word from Port Townsend, Wash., bearing date of February 26. Public

vaccinators are making a house-to-house visitation, accompanied by a squad of policemen.

The death of Prof. H. Schapiro, of St. Petersburg, is announced. He was the author of works on internal medicine. Prof. A. Rocha, editor of the *Coimbra Medico*, also died recently, and Mexico has lost a prominent member of the profession in the death of Prof. Alfonso Herrera.

Antituberculosis dispensaries are to be established in Paris, by a benevolent society. They are to be for the treatment of tuberculosis alone, and medicine, food and garments distributed gratuitously. The society will also supervise the patient at his home, to render the conditions as favorable as possible for recovery.

The Progress of the Plague.—On February 27, 7 new cases of plague were reported in Cape Town, South Africa, 2 being Europeans. The plague returns give 3396 deaths as the total for all India for the last week in January, with 3277 for the preceding week. In Bengal, where the greatest number of cases and deaths occurred, there were 2261 deaths, and in Bombay City 427 deaths during the last week in January, with 308 the previous week. In that city the epidemic increased markedly, with a report of 922 deaths for the second week in February. In Mauritius, the week ending February 14, 14 new cases of plague were reported with 10 deaths. In England, according to the *British Medical Journal*, the London County Council has authorized its Public Health Committee to spend £50,000 if necessary, in dealing with suspect and contact cases of plague. London has been divided into four districts for the purpose of isolation, and thorough accommodation for contacts and suspects will be provided in each district. Arrangements have been made for providing, in a few hours, for the accommodation of 200 persons at a time, at a cost of £16,000, and 600 more can be provided for within a few weeks should it be necessary. While these buildings are not to be commenced unless plague actually appears in London, £7000 is to be spent on the drainage, water-supply and preparation for the foundations for these temporary buildings.

Correspondence.

The Modern Methods of Quarantine.

ST. PAUL, MINN., Feb. 18, 1901.

To the Editor:—In the *N. Y. Medical Journal* of Nov. 3, 1900, Dr. A. H. Doty discusses this subject as bearing upon marine sanitation. It is true, as he states, that in the past there has been much unwarranted fussiness in the administration of marine quarantine. Methods have been in vogue that caused much delay in the discharge of passengers, mails and cargo, that were in no way based upon scientific teaching, and that were largely in demand chiefly for the benefit of the port sanitary officials.

Had Dr. Doty confined his arguments to marine sanitary methods deserving of criticism, his field would have been sufficiently wide. But there are many statements in his paper which have no bearing upon the disinfection of a cargo of iron in the hold of a vessel, or of rags that supposedly have been steamed and baled under pressure in a foreign country, or of passengers lined up on the deck, or of mails lying in an open boat. For example, the following statement appears: "Contrary to popular belief the most careful investigation, both from a scientific and a practical standpoint, has demonstrated that the clothing actually worn by well persons is not a medium of infection." There are few modern sanitarians who will accept this view. Few, I think, will admit that the well can not carry in their clothing the infection of scarlet fever or of smallpox directly deposited or transmitted through the atmosphere, from a patient in the stage of desquamation. Clothing soiled with the infectious discharge from a patient ill with typhoid fever, tuberculosis, or diphtheria can certainly convey infecton to others.

The following are a few illustrations of this fact: My father, a physician, was attending scarlet fever patients. He tried to prevent conveying the disease to his own family of small children, by carefully removing the suit worn while visiting such patients before returning to his home. In spite of these precautions, however, he undoubtedly did convey the disease to his own children, one of whom died in consequence.

A few years ago, while in attendance upon scarlet fever patients, I was careful so far as my clients were concerned, but somewhat careless in my methods as related to my return home, and my wife contracted the disease, beyond doubt through my carelessness. Dr. Montizambert, Director General of Public Health in Canada, in reporting on a recent outbreak of smallpox in Winnipeg (1900), says: "Careful and continual injury lead to the conclusion that he must have contracted the disease from the unpacking of infected clothing during his voyage from Hongkong.'" 'Quite recently infection of a family in Minnesota, with smallpox, was traceable to the visit of the father to one of his rented houses, in which there had been cases of smallpox a short time previously. His clothing must have conveyed the disease for he himself was not ill. Recently a woman whose child had died of diphtheria borrowed mourning goods of a neighbor. Diphtheria, soon after this borrowing, appeared in the family of the lender, undoubtedly due to infection, through the medium of the loaned clothing.

I mention these cases as a few that have come under my own observation. Dr. Doty admits that it is "within the bounds of possibility" for such cases to occur exceptionally. I venture to say that instead of being exceptions they are of daily occurrence, but unreported. The casual investigator will often fail to discover the source of infection in an outbreak of scarlet fever, smallpox or diphtheria, when the careful observer will find the fault to rest upon some healthy individual as the transmitter of the disease. Dr. Doty further states: "The busy medical practitioner may during the day visit many cases of infectious disease and may go from them to others without previously changing his clothing or performing disinfection. He has reason to believe that he does not act as a medium of infection; as he sees no evidence of it in his own home, nor is evidence presented to him that he transmits disease to his patients." That the busy practitioner may do as thus stated is too true. Surgeons hesitate to go from a patient having an infectious disease to any operative work. Why should they hesitate if there is no danger of their conveying infection. I contend that every physician in attendance on certain infectious diseases, such as scarlet fever, smallpox, diphtheria, etc., should wear a protective gown, and this should be moist with an antiseptic solution at the time it is worn, or should be disinfected as soon as possible after such a visit. Dr. Doty, after expressing himself as to the absence of danger from the clothing of non-infected persons, says: "in municipal sanitary work this knowledge is valuable as we are then reasonably assured that the disease will not spread—at least to any serious extent—through the medium of clothing worn by well persons." Truly, this is a remarkable position to be taken by a sanitarian at this date. Were it true it would mean that the quarantine of the homes of those ill with smallpox and scarlet fever is unnecessary; that so long as the actual patient is kept at home no danger can follow the promiscuous mixing of other members of the family with the public at large. If his statement is true it means that the exclusion of healthy children, resident in an infected house, from school is a mistake. It may be true that there may be the attendance at school of many children from infected homes without the appearance of many cases of disease due to such exposure, but this does not prove the non-existence of danger from such a course. One has but to study the rise in numbers of infectious diseases following the general opening of schools in the fall to realize that the association of children has much to do with the spread of infectious diseases, and that this increase in disease is dependent on the intermediate as well as the mediate infectious children. Dr. Doty, in support of his opinion, says: "As a matter of fact, many careful observers believe that the activity, at least of some, of the specific organisms is inhibited by an exposure of only a few minutes to air and sunlight." This proves nothing. Admitting some of his statements to be true, the argument does not apply to clothing, much of which gets little sunlight or air, even when in use.

It may be well to touch upon two other statements in Dr. Doty's paper: 1. "As far as I am able to ascertain no authentic report exists which shows that cargoes of vessels have trans-

mitted bubonic plague through the medium of infected rats or other sources." This, it is not necessary for me to argue on further than to say that even should the statement be true, it does not prove that "rats or other sources" might not have transmitted the disease. He further states: "rats collected at New York from coffee-carrying vessels from Rio Janeiro and Santos, during the recent outbreak of plague in these two places were examined bacteriologically and in no instance was there the slightest evidence of bubonic plague." What, may I ask, does the Doctor expect to prove by this statement? To me it represents but a fortunate circumstance, for no one questions, I presume, that rats may be infected with the plague bacillus, nor would any one question the fact that had any of the rats on any of the ships examined been infected, a careful bacteriologic examination of such rats should have demonstrated the fact. 2. He also says: "Most careful investigation has failed to present satisfactory evidence that either foreign or domestic rags act as a medium of infection (for anthrax) although they include all kinds of wearing apparel, which is frequently filthy and offensive." Yet the Doctor must admit that anthrax has been brought into this country through infected media in ships' cargoes; and if capable of transmission in such media, why is it not possible that rags should be a means of transmission if infected?

I think any one who has traveled extensively by water can realize that there is much absurd maratime inspection, but that does not prove that infectious diseases can not be transmitted by cargo, passengers or clothing; or, in other words, that infected human beings are the only means of transmission for infectious diseases.

In conclusion, I can not agree with Dr. Doty either in the premises or conclusions presented in his article, and I think my position in this respect will be borne out by sanitarians and bacteriologists in general.

H. M. BRACKEN, M.D.

Fatality of the Rattlesnake.

KNOXVILLE, Tenn., Feb. 26, 1901.

To the Editor:—Your editorial on the "Fatality of the Rattlesnake" induces me to say a word on the subject. The professor referred to therein is manifestly not posted on rattlesnakes. During the past eight years I have had occasion to spend a considerable portion of six winters in Southern Florida. The diamond rattler is a denizen of that region, and since I made my first visit there eight years ago, I know of three men, a horse, and a number of dogs dying from rattlesnake bites. The diamond rattler is said to be the most poisonous of all, and attains an enormous size; fortunately he is usually peaciably inclined, and all he asks is to be let alone.

On one of my visits there I talked with an Indian on the subject, and asked him how he cured rattlesnake bites. He very promptly answered: "Don't cure him. Big sleep. Big sleep." So, not only the Indians of that section, but the whites also consider a man as good as dead when a diamond rattler strikes him.

C. DEADERICK, M.D.

Association News.

New Members.

The following is a list of new members of the A. M. A. for February, 1901:

ALABAMA.
Kilfiebrew, J. Buckner, Mobile.

ARKANSAS.
Christian, R. B., Little Rock.

CALIFORNIA.
Barbat, Wm. F., San Francisco.

CONNECTICUT.
Bell, Newton S., Windsor.

FLORIDA.
Pierce, Claude C., Key West.

ILLINOIS.
Lockhart, Charles H., Witt.
Davis, John A., Farmer City.
Scott, R. G., Geneva.
Bench, Edward M., Galena.
Fisher, Frank B., Springfield.
Plummer, Amzi S., Peoria.
Bishop, Arthur M., Chicago.
Giles, Henry Wiley, Wataga.
Ballard, C. N., Chicago.
Lyons, John A., Chicago.
Montgomery, Frank H., Chicago.

INDIAN TERRITORY.
Donohue, Philip, Afton.

INDIANA.
O'Day, John C., Montpelier.
Allen, Horace R., Indianapolis.

IOWA.
Neill, Hiram, Sibley.
Ratcliffe, J. J., Waukon.
Struble, Andrew, Inwood.
Evans, M. M., Le Grand.

KENTUCKY.
Schultz, Wm. F., Covington.
Dickinson, Jos. S., Trenton.
Forsythe, M. L., Harrodsburg.
Meredith, T. O., Burgin.

LOUISIANA.
Powlett, Stephen L., Hammond.

MARYLAND.
Morrison, Wm. Baker, Hagerstown.
Pitsnogle, J. E., Hagerstown.
Penrose, Clement A., Baltimore.

MASSACHUSETTS.
Pierce, A. Martin, New Bedford.
Miller, Jarred H., Wollaston.
Crowell, Samuel, Boston.

MICHIGAN.
Burnham, Wm. A., Hancock.
Gammon, H. B., Hastings.
Campbell, Alexander Mackenzie, Grand Rapids.
Long, C. M., Escanaba.

MINNESOTA.
Palmer, Walter A., Redwood Falls.
Hirschfield, Adolph, Minneapolis.
Nippert, L. A., Minneapolis.
De Jong, Conrad, Edgerton.
Cutts, Rollin E., Minneapolis.
Hunt, W. A., Northfield.
Murphy, Wm. B., Minneapolis.

MISSOURI.
Witherspoon, T. C., St. Louis.
Ketcham, C. M., Carthage.
Robinson, G. W., Joplin.
Wallace, Charles H., St. Joseph.
Burke, Foster W., Laclede.

MISSISSIPPI.
Bridges, Robert Richard, Bridgeville.
Ward, B. F., Winona.

NEBRASKA.
Fochtman, John H., Cozad.

NEW HAMPSHIRE.
Wheat, A. F., Manchester.

NEW JERSEY.
Weeks, David F., Trenton.
Bennett, J. K., Gloucester City.

NEW YORK.
Bemis, Morris N., Jamestown.
Douglas, W. E., Middletown.
Evans, Wm., Westtown.
Myers, Frank D., Slate Hill.
McPhail, Donald T., Purdy Station.
Smith, Harrie Eugene, Mt. Vernon.
Bullard, W. Duff, New York City.
Manning, F. O., New York City.
Hubbell, Marvin D., New York City.
Neuhaus, G. E., New York City.
Farrington, Jos. Oakley, New York City.
Herter, Christian A., New York City.
Ferguson, James A., New York City.

NORTH DAKOTA.
Hood, Charles E., Drayton.

OHIO.
Koehler, James A., Shelby.

PENNSYLVANIA.
Tappan, L. N., Philadelphia.
Deaver, Richard W., Philadelphia.
Everitt, Ella B., Philadelphia.
Middleton, Wm. J., Steelton.
Blanchard, Geo. A., Scranton.
Gibson, Maris, Wilkes Barre.
Shively, J. B., Shippensburg.
Shoemaker, Levi L., Wilkes Barre.
Gross, H. F., York.
Boyle, Julius J., Susquehanna.

SOUTH DAKOTA.
Butler, Clarence A., Dell Rapids.

TENNESSEE.
Mitchell, R. H., Memphis.
Cherry, E. Otis, Newbern.
Crofford, T. J., Memphis.

TEXAS.
Florer, T. W., Waxahachie.
Horsley, John S., El Paso.

VIRGINIA.
Culpepper, Vernon G., Portsmouth.
McGuire, Stuart, Richmond.

WISCONSIN.
Winslow, Rush, Appleton.
Noyes, Geo. Kasson, Milwaukee.
Gilberson, Peter C., Mt. Horeb.

St. Paul as a Place of Meeting.

Many of the members of the AMERICAN MEDICAL ASSOCIATION remember with pleasure their last meeting in St. Paul. It was June, 1882, nearly twenty years ago, the month being one of the most beautiful in the year in Minnesota. Some of the members have passed away since then, and younger men have taken their places, but those still living, who were in St. Paul then, speak with enthusiasm of the saintly city, its beauty, pleasant environments and the cordial hospitality that made the meeting of 1882 so memorable a one. This year the ASSOCIATION will find many changes, and the physicians and their wives who were there then and who have not visited St. Paul in the interim will have some difficulty in recognizing it. For in nineteen years St. Paul has grown from a town to a city; a city of broad asphalted streets, with electric cars running in every direction, fine public buildings, good hotels, beautiful churches, theaters, pretty parks in the city, and Como Park outside. There are four well-equipped hospitals, which the citizens justly claim are not equalled in any city of the size in the country. Then there is picturesque, historic Fort Snelling, only a few minutes drive or street-car ride from the city; Hamline University, the St. Paul Seminary and the Agricultural College, all institutions in near suburbs and all worth a visit by the tourist. Minneapolis, which contains much of interest, is connected with St. Paul by two electric lines. St. Paul, situated as it is on the high ground on the left bank of the Mississippi, has so many natural advantages that it has not been difficult to make it one of the most beautiful cities of the West. The old union depot has been enlarged as the city has grown, and near it runs a car line from which the strangers

can transfer to all the other lines running through town and out into the suburbs. The electric-car system in the twin cities is in every way abreast of the times. The ASSOCIATION is fortunate in the time of the meeting, June, as Minnesota weather is then "showing off." The city will be looking its prettiest, as it is just after the "spring cleaning," and before the hot sun of midsummer has had a chance to blister the fresh green leaves. The season is also just beginning at near-by lakes, of which there are so many. The sunny skies of Minnesota have been compared to those of Italy, and the combination of cool air and the warm June sun make this particular season of the year the most desirable one for out-of-town visitors.

Married.

HORATIO B. WITHERS, M.D., to Miss Mary L. Wester, both of Mineral Wells, Texas, February 12.

HARRY P. FINDLEY, M.D., Massillon, Ohio, to Miss May Quinby, of Monmouth, Ill., February 14.

DANIEL G. R. LEQUESNE, M.D., Cleveland, Ohio, to Mrs. Mary R. French, of The Dalles, Ore., at Toledo, Ohio, February 25.

Deaths and Obituaries.

Abbott Hodgman, M.D., New York University, 1858, died at his home in New York City, February 27, aged 68 years. He served on the staff of Blackwell's Island Hospital, N. Y., having medical charge of the local prison for eight years. In 1884 he was a member of the commission appointed to investigate tenement conditions. He was a member of the AMERICAN MEDICAL ASSOCIATION and a trustee of both the Metropolitan Museum of Art and the New York Savings Bank.

Samuel Camp, M.D., New York University, 1851, of Great Barrington, Mass., died February 29, aged 72. He began practice in New Marlborough, Mass., and four years later went to Michigan, returning to Great Barrington in 1859. He was surgeon of the Twenty-seventh Massachusetts infantry during the Civil War.

Seneca T. Hyde, M.D., University of Vermont, Burlington, 1866, a successful practitioner of Neponset, and a member of the Norfolk District and Massachusetts Medical Societies, died at Hamilton, Bermuda, where he had gone for his health, February 17, aged 65.

John H. Renner, M.D., Northwestern University Medical School, Chicago, 1864, died at his home in Lagro, Ind., from Bright's disease, February 21, aged 70. He was a member of the AMERICAN MEDICAL ASSOCIATION.

William B. Thomason, M.D., University of Georgia, Augusta, 1854, who had practiced in Bullock County for nearly half a century, died at his home in Louisville, Ala., February 2, aged 74.

Thomas O'Reilly, M.D., Royal College of Surgeons, England, 1849, died February 24, at his home in St. Louis, Mo., where he had practiced for more than fifty years, aged 74. He was a member of the British Medical Association.

William F. Aiken, M.D., Harvard Medical School of Boston, 1886, killed his wife and himself February 27, at his residence in Savannah, Ga. He was 35 years of age and had been mentally unbalanced for several years.

Matthew C. Martin, M.D., Milwaukee Medical College, 1899, died at the Milwaukee County Hospital, of which he was assistant resident physician, February 21, from typhoid fever, aged 25.

William Glenn, M.D., University of Minnesota, 1893, and professor of physical diagnosis at Hamline University, died from pneumonia, at his home in Minneapolis, February 20, aged 41.

Dewees Cunningham, M.D., Medical College of Ohio, Cincinnati, 1871, an esteemed practitioner of Wurtemburg, Pa., died from heart disease at his home in that place, February 19, aged 59.

William F. Frost, M.D., Rush Medical College, Chicago, 1896, died at the residence of Dr. Harry R. Desmond, Plattsburg, Mo., February 18, from pulmonary tuberculosis, aged 27.

Edwin A. Fessenden, M.D., Bellevue Hospital Medical College, New York, 1889, died on February 28, at Portland, Me., from poisoning by carbolic acid accidentally taken, aged 55.

Horatio N. Bradshaw, M.D., Rush Medical College, Chicago, 1867, died at his home in Superior, Neb., February 22, after an illness of three weeks.

Street Jones, M.D., Bellevue Hospital Medical College, New York, died from pneumonia, at his home in Goldsboro, N. C., February 20, aged 27.

Littleton F. Brittingham, M.D., Missouri Medical College, St. Louis, 1847, died suddenly at his home, Hannibal, Mo., February 24, aged 80.

Warden James Byers, M.D., College of Physicians and Surgeons, New York, 1889, died at his home in Brooklyn, N. Y., February 22, aged 38.

John W. Elliott, M.D., University of Louisville, Ky., 1883, of Lake City, Miss., died after a long illness at Yazoo City, Miss., February 14.

B. F. Longstreet, M.D., Jefferson Medical College, died at his home, Mount Auburn, Cincinnati, Ohio, February 21, from la grippe, aged 52.

Stephen J. Clark, M.D., University of New York, 1861, for many years a practitioner in New York City, died in Sing Sing, N. Y., February 24.

J. J. Bozeman, M.D., Medical College of the State of South Carolina, Charleston, 1857, died at his home in Ninety-Six, S.C., February 19.

E. F. Tidwell, M.D., Louisville Medical College, 1882, a practitioner of Lester, Ark., was found dead at Camden, Ark., February 25.

Samuel B. Park, M.D., Beaumont Hospital Medical College, St. Louis, 1888, died at his home in Winfield, Kan., February 14, aged 56.

Charles E. V. Gissy, M.D., Washington University, St. Louis, 1875, died at his home in Breese, Ill., February 21, aged 47.

Charles S. Hinman, M.D., Dartmouth Medical College, Hanover, N. H., 1875, died at his home in West Charleston, Vt., aged 54.

Miscellany.

Yellow Fever Investigation.—We give below the abstract of the interim report published by H. E. Durham and the late Walter Myers, of the Liverpool School of Tropical Medicine's yellow fever investigation, in the *British Medical Journal* of February 23. The complete report was interrupted by the authors being attacked by yellow fever, and, as previously noticed in THE JOURNAL, the results to Dr. Myers were fatal. This abstract was published before its authors could have known of the results reported by Reed, Agramonte and Carroll, in THE JOURNAL of February 16. The authors' conclusions are as follows:

1. Sufficient search reveals the presence of a fine small bacillus in the organs of all fatal cases of yellow fever. We have found it in each of the fourteen cadavers examined for the purpose. In diameter the bacillus somewhat recalls that of the influenza bacillus; seen in the tissues it is about 4 microns in length. 2. This bacillus has been found in kidney, in spleen, in mesenteric, portal and axillary lymphatic glands, etc., taken from yellow fever cadavers directly after death. In the contents of the lower intestine apparently the same bacillus is found often in extraordinary preponderance over other microorganisms. Preparations of the pieces of "mucus," which are usually, if not always, present in yellow fever stools, at times may almost present the appearance of "pure culture." 3. Preparations of the organs usually fail to show the presence of any other bacteria, whose absence is confirmed by the usual sterility of cultivation experiments. 4. It is probable that

this same bacillus has been met with but not recognized by three other observers. Dr. Sternberg has mentioned it; and he has also recorded the finding of similar organisms in material derived from Drs. Domingos Freire and Carmona y Valle; but he did not recognize its presence frequently, probably on account of the employment of insufficiently stringent staining technique. 5. It is probable that recognition has not been previously accorded to this bacillus by reason of the difficulty with which it takes up stains (especially methylene blue), and by reason of the difficulty of establishing growths on artificial media. 6. The most successful staining reagent is carbolic fuchsin solution (Ziehl), diluted with 5 per cent. phenol solution (to prevent accidental contamination during the long staining period), immersion for several hours, followed by differentiation in weak acetic acid. Two hours staining period may fail to reveal bacilli, which appear after 12 to 18 hours. The bacilli in the stools are often of greater length than those in the tissues, and they may stain rather more easily; naturally the same is true of cultures. 7. Since the bacilli are small and comparatively few in numbers they are difficult to find. To facilitate matters at our last two necropsies (14th and 15th) a method of sedimentation has been adopted. A considerable quantity of organ juice is emulsified with antiseptic solutions, minute precautions against contamination and for control being taken; the emulsion is shaken from time to time and allowed to settle. The method is successful and may form a ready means of preserving bacteria-containing material for future study. The best fluid for the purpose has yet to be worked out; hitherto normal saline with about one-fifth per cent. sublimate has been employed. 8. Pure growths of these bacilli are not obtained in ordinary aërobic and anaërobic culture tubes. 9. Some pure cultures have been obtained by placing whole mesenteric glands (cut out by means of the thermo-cautery) into broth under strict hydrogen atmosphere. Investigations into the necessary constitution of culture media for successful cultivation are in progress. 10. Much search was made for parasites of the nature of protozoa. We conclude that yellow fever is not due to this class of parasite. Our examinations were made on very fresh organ juices, blood, etc., taken at various stages of the disease, with and without centrifugalization, and on specimens fixed and stained in appropriate ways. We may add that we have sometimes examined the organs in a fresh state under the microscope within half an hour after death. 11. The endeavor to prove a man-to-man transference of yellow fever by means of a particular kind of gnat by the recent American Commission is hardly intelligible for bacillary disease. Moreover, it does not seem to be borne out by their experiments, nor does it appear to satisfy certain endemiological conditions. It is proposed to deal more fully with the endemiology and epidemiology of the disease on a later occasion. 12. We think that the evidence in favor of the etiological importance of the fine small bacillus is stronger than any that has yet been adduced for any other pretended "yellow fever germ." At the same time there is a much further work to be done ere its final establishment can be claimed. The acquisition of a new intestinal bacterium would explain the immunity of the "acclimatized."

Extra-respiratory Cough.—A. Martiner devotes an article, in the *Presse Médicale* of January 23, to the reflex coughs which occur without symptoms in the respiratory passages. The aim of treatment should be: 1, to diminish the sensibility of the mucous or serous membrane starting the reflex; 2, to diminish the excitability of the nerve center presiding over the cough; 3, to act on the centrifugal routes, and 4, to induce the will to control the bulbar center. The first of these indications includes the removal of the cause and, sometimes, anesthetizing the mucosa. Frequently the cough is arrested instantaneously by cocainizing the nasal fossæ or drinking a chloroform-cocain potion. Opium and its derivatives answer the second indication in ordinary coughs, but are injurious in this so-called reflex cough. The bromids are useful and also Meglin's pills—5 cg. each of extract of hyoscyamus, extract of valerian and zinc oxid, for one pill—to be taken three times a day. The centrifugal routes are sometimes brought under control by applying two Milan plasters over the phrenic nerve, one in the cervical region above the clavicle, between the two heads of the sterno-cleido-mastoid muscle; the other at the lower edge of the ribs, over the "phrenic button." This measure has proved particularly useful in reflex coughs accompanied by hyperesthesia along the course of the phrenic nerve. The will-power should be strengthened by suggestion.

Societies.

COMING MEETINGS.

Medical Society of the Missouri Valley, Omaha, Neb., **March 21, 1901.**

Tri-State Medical Society of Iowa, Illinois and Missouri, Keokuk, Ia., April 2-3, 1901.

Medical Association of the District of Columbia, Washington, D. C., April 2, 1901.

Tennessee State Medical Society, Nashville, April 9-11, 1901.

Florida Medical Association, Jacksonville, April 10, 1901.

Western Ophthalmological and Otolaryngological Association, Cincinnati, Ohio, April 11-12, 1901.

Medical Association of the State of Alabama, Selma, April 16, 1901.

Medical Society of the State of California, Sacramento, April 16-18, 1901.

South Carolina Medical Association, Florence, April 17, 1901.

Medical Association of Georgia, Augusta, April 17, 1901.

Louisiana State Medical Society, New Orleans, April 18-20, 1901.

Medical and Chirurgical Faculty of Maryland, Baltimore, April 23-26, 1901.

Texas State Medical Association, Galveston, April 23, 1901.

American Association of Genito-Urinary Surgeons, Old Point Comfort, April 30, 1901.

Association of American Physicians, Washington, D. C., April 30, 1901.

Italian Congress of Pediatry.—The general secretary of this Congress, which will convene for its fourth session at Florence, October 15, is Dr. Luigi Concetti of Naples.

German Congress of Surgery.—The date appointed for the thirtieth session of the Congress is April 10 to 13, and the place, Berlin. Professor Czerny, of Heidelberg, has the arrangements in charge.

German Congress of Dermatology.—The seventh session of the Congress opens at Breslau, May 28, with addresses by Finsen, Schiff, Freund and others. Professor Neisser of Breslau is to preside.

Southwestern Iowa Medical Association.—The seventh annual convention of this Association was held in Creston, February 21. Dr. Vernon L. Traynor, Council Bluffs, was elected president; Dr. Donald Macrae, Council Bluffs, vice-president; Dr. Frank E. Sampson, Creston, secretary, and Dr. Joseph P. Claybaugh, Creston, treasurer.

Columbus (Ohio) Academy of Medicine.—The annual meeting and banquet of the Academy was held February 26, President Dr. James C. Lawrence in the chair, and Dr. Theodore W. Rankin officiating as toastmaster. Dr. Dudley P. Allen, Cleveland, was the guest of honor, and responded to the toast: "The Profession in the Metropolis of Ohio."

Oneida County (N. Y.) Medical Association.—The members of the First District Branch of the New York State Medical Association, residing in Oneida County, met at Utica, February 25, and organized the Oneida County Medical Association, with the following officers: Dr. William B. Reid, Rome, president; Dr. Henry C. Palmer, Utica, vice-president; Dr. J. O. Stranahan, Rome, secretary, and Dr. John Groman, Utica, treasurer.

New York State Medical Association.—A special meeting of the members of the First District Branch was held in Utica, February 25, for the purpose of reorganizing the branch association. The meeting was opened by an address of welcome by the president, Dr. Charles B. Tefft, Utica, after which the following officers were elected: Dr. J. Wallace Douglas, vice-president, Boonville; and Dr. Edgar H. Douglas, Little Falls, secretary and treasurer.

Sullivan County (N. Y.) Medical Association.—The members of the Fifth District Branch of the New York State Medical Association, residing in Sullivan County, met at Liberty, February 19, for the purpose of organizing the Sullivan County Medical Association. The following officers were elected: Dr. Charles S. Payne, Liberty, president; Drs. Frank P. Howser, Centreville Station, and Stephen W. Wells, Liberty, vice-presidents; Dr. John L. C. Whitcomb, Liberty, secretary, and Dr. Charles W. Piper, Wurtsboro, treasurer.

PHILADELPHIA NEUROLOGICAL SOCIETY.

Meeting held February 25.

President Dr. James Tyson in the chair.

Astereognosis.

DRS. W. H. TELLER and F. X. DERCUM exhibited a case of this affection. The patient was a man 30 years of age, who

was, on Nov. 17, 1900, struck on the head by a base-ball bat, and was admitted to the Jewish Hospital six days later, unconscious. A small cut was present over one eyebrow, and there was a depression in the region of the fissure of Rolando. There was complete paralysis of the right arm and leg, and deviation of the right eyeball. An incision was made over the depression and the bone removed. The membranes of the brain were congested but intact. A cot extending for two inches down into the brain substance was removed, and on removal a small amount of brain substance discharged. The patient, who had been unconscious for six days, several hours after the clot was removed regained consciousness and, on the following day, the paralysis of the right arm and leg began to disappear.

Six weeks later Dr. Dercum found astereognosis present. At this time the man was totally unable to recognize anything placed in the right hand, such as a spoon, scissors, or other object, but these could be at once determined by the left hand. Tactile sensation was partly preserved on the right side. Hypesthesia was marked in the region of the extremities. When the eyes were shut with the right hand, the man was unable to tell the position in which the fingers were placed. There was some defect of the muscle sense. When he would stand and close the eyes he would sway considerably. There was more or less ataxia of the right arm. When he closed his eyes he was unable to touch the tip of the nose without considerable trouble. It was evident that he had a lesion of the parietal lobule involving the parietal convolution, giving rise to the astereognosis.

DRS. GEORGE L. WALTON and WALTER E. PAUL, of Boston, by invitation, read a paper entitled "Astereognosis with Illustrative Cases." Dr. Walton stated that the literature on this subject had been considerably added to by Dana, Burr, Sailer, Mills, Keen and other writers. As to the differentiation between hysteria and an organic lesion in which astereognosis is present, if hysteria, this symptom will disappear suddenly. It appears that the muscle nerve fibers follow a different course from those of the cutaneous sensation. The ability to close the eyes, and to recognize objects depend on contact sense and muscle sense. The first case reported was one who had occipital headache, involuntary movement of the eye, and ankle-clonus. This patient was unable to recognize objects with the left hand. The temperature and pain sense were lost. The patient gradually became worse and an operation was done by Dr. Warren. The surface of the brain presented no abnormality. A cyst was, however, detected lower down. Six weeks later the paralysis gradually disappeared, but death subsequently occurred.

The second case had been seen on Dec. 7, 1900, the patient stating that for some time there had been numbness of the left hand and later numbness of the left leg. Slight aphasia was also present. When seen she was unable to recognize an object such as a bottle, but could recognize a key. A short time later double optic neuritis appeared. In this case an operation was done and a growth, the nature of which was doubtful, removed. No change in the paralysis occurred, except that the aphasia became more marked as well as mind blindness.

In a third case the paralysis was limited to the lower extremities. The patient could distinguish a pencil if applied transversely over the foot. In this case there was a history of paralysis of the left leg, and attacks of Jacksonian epilepsy occurring in one toe on the left side. Double optic neuritis was present. The Babinsky reflex was present. Pain and temperature sense were normal. In this case an opening was made in the skull in the region of the fissure of Rolando, and just behind the fissure the remains of an old clot found. The next day the motor paralysis extended to the hand. Articles placed in the hand could not be recognized. Convulsions occurred a few weeks later, but subsequently she regained a moderately good condition. The speaker does not believe that experiments on the lower animals would be of a very great value in the determination of the exact nature of astereognosis. In over fifty old cases of hemiplegics astereognosis was not present in thirty of them.

DR. F. X. DERCUM, in discussing this paper, expressed belief that we have to deal with both a motor and a sensory astereognosis.

DR. CHARLES W. BURR thought the term "astereognosis sense" not altogether a good one; "asterognosis faculty" seems preferable. He once saw a man who had suffered from a fracture of the skull, from which he had recovered. When seen by the speaker there was no disturbance of sensation. He knew the position of pain, of heat and of cold, but with his eyes closed could not recognize a single object. He also knew of a case of mind blindness in which heat and cold were recognized. In his opinion there is some center in the brain which stores up things which have been felt, and this center might be in the posterior parietal lobule.

DR. J. HENDRIE LLOYD stated that he at one time treated a case in which the patient could not tell the term to apply to an object placed before her, such as a knife, key or handkerchief, but when these were placed in her hand they could at once be recognized.

DR. WM. G. SPILLER spoke of different writers who had made investigations on this subject. He referred to the different tracts in the cord, such as that conveying tactile sense, some writers believing this to be in the lateral columns while others place it in the posterior.

NEW YORK COUNTY MEDICAL ASSOCIATION.

Meeting held February 18.

Parker Syms, M.D., President.

Ulcer of Placenta; Umbilical Cord Severed Before Birth.

DR. EDEN V. DELPHEY presented this specimen. The patient, a multipara, aged 32, while hanging up clothes suddenly experienced a tumultuous sensation in her abdomen, and this immediately followed by the onset of labor, though she had been pregnant only 7½ months. That evening, or about twelve hours later, Dr. Delphey performed manual dilatation, and with the aid of forceps delivered a dead fetus. It was found that there was only a short stump of umbilical cord attached to the child at its birth, though the total length of the cord was fourteen inches. Examination of the placenta after its spontaneous delivery revealed the presence of an ulcer, one inch in diameter, and this the pathologist reported to correspond to a broken down gumma. Two hours after the birth of the child the mother developed symptoms of internal hemorrhage and severe collapse, and died.

Lack of Uniformity in Prescribing Myopic Glasses.

DR. S. BUSBY ALLEN read a paper on this subject. He said that carelessness in prescribing eyeglasses for myopes leads to much distress on the part of the patient, and if not relieved the ultimate effect may be morbid introspection and even mental deterioration. There is considerable difference of opinion concerning the effect of accommodation.

DR. HENRY OPPENHEIMER pointed out that by proper attention to the habits of life of many children much can be done toward preventing the development of a high degree of myopia. Such children should be encouraged to participate in out-door games, and should be prevented from reading in a poor light, or in faulty positions which tend to produce congestion of the vessels of the head. It is most important to correct, as far as possible, the effort at convergence.

DR. FRANK SKEEL said that the apparent lack of uniformity in prescribing glasses for myopia is explained by the necessity for treating each case by itself. For low degrees of myopia, it is his custom to prescribe glasses which fully correct the error; for high degrees of myopia, very little can be done. When the myopia is found to be increasing, marked benefit will often accrue from keeping the eyes under the influence of atropin for six weeks or more.

DR. J. H. WOODWARD agreed with what had been said about the great importance of correcting very early in life the slight degrees of myopia. Where it is moderate in degree, glasses for distance should be worn, also for reading, in order to strengthen the muscles of accommodation. There would be

less myopia among our school children if they were not so overworked in school.

DR. J. HERBERT CLAIBORNE said that it had been his practice for many years to endeavor in youth to give the myope as nearly as possible perfect distant vision, the glasses being worn for both near and distant work. By a process of education the muscles of accommodation can be readily accustomed to this change.

A New Operative Method of Exposing the Seminal Vesicles and the Prostate for the Purpose of Extirpation or Drainage.

DR. EUGENE FULLER read a preliminary report on this subject. It will appear in THE JOURNAL.

A Contribution to the Bottini Operation for the Radical Relief of Prostatic Obstruction.

DR. L. BOLTON BANGS, author of a paper on this topic, expressed the opinion that enlargement of the prostate usually begins in early life. Although he has had an experience of three years with the Bottini operation, he looks upon it as a serious one, for which the patient should be most carefully prepared. The operation requires skill, and should be done very slowly, as this slowness is the best guarantee against secondary hemorrhage. The operation is apt to be followed by frequent and scalding urination, and with bloody urine for twenty-four or forty-eight hours. In from one to three weeks there is very often secondary hemorrhage. From the tenth to the fourteenth day dark particles of burned tissue make their appearance in the urine; occasionally there will be larger fragments. In 11 out of his 35 cases there was fever, and 6 had distinct chills within twelve hours after the operation. The patient should not be allowed up for one week, and should not resume his occupation for about two weeks more; in any case, he should be kept under careful observation until the urine becomes clear and there is no longer irritation. It is important that during the operation the electric current be kept up sufficiently to preserve the blade of the instrument constantly at a white heat. In one of his cases it failed in the midst of the operation, and he was compelled to complete the work with a Paquelin cautery. The result was instructive, for the Paquelin cautery had produced a thick, leathery eschar, but no action in the adjacent tissues, while the galvanocaustery had produced a peculiar change in these tissues, which could be readily appreciated by the surgeon, yet the eschar was fine and thin. In 20 per cent. of his cases an increased amount of spontaneous urination resulted, while 20 per cent. were not improved. The greatest benefit was noted in those who had been largely or completely dependent on the catheter. One death was attributable to the operation, having been caused by sepsis, and as two others had occurred within two weeks, they were mentioned, though he does not feel at all sure that the operation was either directly or indirectly, responsible for them.

DR. WILLY MEYER said that he had done this operation on thirty-nine patients. He called attention to the fact that gonorrhea was a factor in about 75 per cent. Local anesthesia is ordinarily not advisable, but if employed better results will follow from mixing two-thirds of an ounce of a 2 per cent. solution of cocain with one ounce of a 3 per cent. solution of eucain. Where the kidneys had been normal he used either general or spinal anesthesia. The latter acted very well in the five cases in which it was tried. As he believes the depth of the incision in the Bottini operation is of importance, he is in the habit of repeating the posterior incision at the time of operaton. The pain after the operation is often intense, and for this reason he has adopted the plan of tying in a smooth Mercier catheter. In this way, much relief is afforded, and if the precaution to keep the urine loaded with antiseptics is taken, the effect of such a practice is to set up a sort of continuous antiseptic irrigation. He is confident that it is a valuable procedure, though not in accordance with established practice at the present time. The after-treatment is certainly arduous and most important in a case operated on by Bottini's method. He thinks that prostatectomy will come to be the operation for "hard" prostates and those having a hard nucleus.

DR. EUGENE FULLER said that he had long been an earnest advocate of prostatectomy, and the results from Bottini's method certainly do not make him feel like abandoning the method he has so long championed and practised. He is of the opinion that the Bottini method will result in relapses from the formation of the cicatricial tissue—indeed, his chief objection to that method is in the fact that one must burn through the tissues of the bladder to reach the prostate. Another serious objection is that it provides no means of securing for the bladder the surgical rest which, in its diseased state, is so often imperatively demanded.

DR. J. W. S. GOULEY said that the selection of the operation should be founded on an exact diagnosis. It should be remembered that Mercier failed in his prostatotomies and prostatectomies where there had been any considerable enlargement of the supramontanal folds. He believes that the Bottini operation is contraindicated in those cases in which the third lobe projects 2 or 3 cm. into the bladder. He himself introduced Mercier's operation into this country, and has performed it upwards of fifteen times. Where the prostate is very large, irrespective of whether it is soft or hard, prostatectomy is the operation to be selected, and he believes its dangers have been much exaggerated. He has dissected about one thousand prostates, and as an outcome of this experience is in a position to assert that the really hard prostate is of rare occurrence.

DR. S. ALEXANDER paid a tribute to Dr. Bangs for his very fair and judicial presentation of his experience with the Bottini operation, and pointed out that this paper has placed the profession in possession of certain new facts. The author has shown that the operation is not always successful, that the period of convalescence is longer than we have been led to suppose, and that he can not claim that a permanent groove remains in the prostate, for he has seen contraction of fibrous tissues as a result of a burn. Through the courtesy of Dr. Bangs, he was allowed to examine a prostate taken, at autopsy, from a man who subsequently died from an entirely independent cause. That specimen showed scars, the result of contraction, but no grooves. When a prostatectomy is done, the whole prostate is not taken out, but only those portions causing the obstruction. He does not deny that his operation of prostatectomy is associated with a high rate of mortality and is a very difficult one, but he contends that it is founded on a correct principle, and that the bad results are purely the outcome of a defective technique and of our general ignorance of the subject. He believes the Bottini operation a valuable form of prostatotomy for certain cases. It should be constantly borne in mind that the principal cause of obstruction is not intravesical.

CALIFORNIA ACADEMY OF MEDICINE.

Regular Meeting, January 22.

Arsenious Acid in Malignant Growths.

Dr. H. M. Sherman occupied the chair, in the temporary absence of the president, Dr. D. W. Montgomery.

DR. HOWARD MORROW read a paper by Dr. Montgomery and himself, entitled "Arsenious Acid in the Treatment of Cancer of the Nose and Face," and presented several cases. The paper consisted of the histories of some patients so treated, and described the technique and the indications for its application. In the clinic they had long talked of the advisability of taking up this mode of treatment, especially since the publication of the articles by Dr. A. R. Robinson, of New York, in favor of it. The histories of the patients shown ran as follows:

Mrs. R., aged 67, entered the clinic on Aug. 27, 1900, showing an epithelioma on the right temple, one-half an inch behind the right eye-brow; it was of about the size of a five-cent piece, and not ulcerated. The paste was applied for two days in succession; it healed kindly in three weeks, and the remaining scar is hardly perceptible.

F. M., aged 60, entered the clinic on Aug. 28, 1900, with an epithelioma of the right cheek, just below the outer canthus, which he said had lasted for ten years. The epithelioma was the size of a dime, ulcerated in the center, and surrounded by a typical waxy border with dilated capillaries crossing over it.

He supposed it to have started from the burn of a sulphur match. The paste was applied three times, for twenty-four hours each time; the resulting sore healed in four weeks, and the scar is very small.

T. B., aged 73, entered the clinic July 6, 1900, for an epithelioma of the nose, which he said had lasted for five years. The lesion was slightly larger than a split bean, was ulcerated in the center, and was surrounded by a hard, raised border, covered with dilated capillaries. There were two applications of the paste, of twenty-four hours each; the resulting sore healed uneventfully in four weeks, the scar being hardly noticeable.

C. F. S. entered the clinic on Aug. 27, 1900, suffering from a rodent ulcer on the right side on the upper lip, over one-half inch in diameter; it had an ulcerated center, and the border was hard, waxy, and infiltrated. There was a great amount of infiltration throughout the right half of the lip. The paste was applied four times for twenty-four hours each time, and the infiltration entirely disappeared, the lesion healing in five weeks, leaving nothing at present but a hypertrophied cicatrix. This was the most difficult case of all to treat, as the position was awkward and the infiltration deep.

Two other patients had been treated and discharged as cured, but the authors had been unable to trace them. They thought that all cancers situated at mucocutaneous junctions, or on mucous surface, in which there is apt to be early involvement of the lymphatic nodules, are best treated by the excision of the growth itself, and adjacent lymphatic channels and nodules; but that the small-celled variety, commonly known as superficial epitheliomas, or rodent ulcers, and usually situated upon some part of the face, are best treated by methods other than operative. The most effective of the non-operative methods are the actual cautery and the various caustics. The caustics commonly employed are chlorid of zinc, chromic acid, caustic potash, formalin, and arsenic. Other methods have been used, such as injections of silver, arsenic, alcohol, aniline dyes, toxins, and electrolysis, but the results have not been satisfactory. Treatment by the *x*-ray is uncertain, many cases not healing at all, and in all it is very slow. Liquid air has been used experimentally in a few instances; it is more painful than caustics and no better in its results.

The patients presented had been treated by arsenic. The strength of the arsenical paste has considerable to do with the result. Marsden never used arsenic stronger than two parts of the arsenious acid to one of the diluent, nor weaker than equal parts of the arsenic and diluent.

In a great many of the recipes given by writers the arsenic is used in smaller quantities; in many, in ridiculously small. The paste used by the authors contained 5 parts of arsenious acid, 3 of gum arabic, and 2 parts of cocain. Just before applying, this powder was mixed with enough water to make a thick paste; the amount of water used is of importance, for if not enough is added to the powder the paste will ball, and not apply well, and if too much is added the paste will run. It will be observed that this paste is only as strong as the weakest recommended by Marsden.

The area to be cauterized was first surrounded by a piece of adhesive plaster, then the paste was applied and covered over with gauze or cotton held in place with adhesive plaster. This dressing was left on for twenty-four hours. Frequently the dressing was applied for several days in succession until there was a marked gangrenous slough. One objection to this treatment was the slight amount of pain felt after the cocain had lost its effect, and another is the acute inflammatory edema which sometimes closes one or both eyes. The edema quickly subsides, however, after the paste is removed. In many cases the cosmetic results from the arsenic treatment are superior to those following surgical means, and this is an important point with growths on the face. Arsenic certainly seemed to have a selective action on malignant tissue, as they had tried it on two lesions that were not cancer, and where it only caused a trifling reaction. One was a large vascular mole, and the other a chronic localized infiltration from pus infection, and it had no effect on either except to cause slight congestion of the parts. It seemed to them that it was just as necessary to have experience in the use of arsenic as it was in the use of the knife in the treatment of cancers. One has to know something of the strength of the paste which should be used, the length of time to apply it, and the amount of tissue to be destroyed. One needs to know what accidents to fear, and also what appearances, apparently threatening, may be disregarded. The inflammatory edema, for instance, while very threatening looking, is in reality very innocent. The hole made by the cauterization is also very portentious looking, but it is wonderful what a small scar it leaves on healing. A large amount of bone may be laid bare at the bottom of a huge ulcer, and yet the lesion may heal kindly without any necrosis of the bone. Immediately after cauterization, on looking at the horrid disfigurement, one vows never to use arsenic again, but when the result is complete those vows are forgotten.

DR. T. W. HUNTINGTON said that these cases show very satisfactory results of the treatment, but not more nor less than from the use of the knife. While recognizing these cases as a form of this disease, he hardly believes that they were the true, or the highest degree of, malignant epitheliomas. There is a difference in the malignancy brought about by the age of the growth and the conditions under which it appears. The location in these makes the diagnosis, in his mind, a little doubtful. He has removed many such tumors, with the same results, and with less pain and suffering. Several years ago, in conjunction with Dr. Cluness, he used the paste with considerable success. The results finally were not as satisfactory as he desired; some were bad, afterward showing a return with a high degree of malignancy.

DR. H. M. SHERMAN voiced the opinion of Dr. Huntington as to the degree of malignancy of the disease, and he also prefers the knife as more certain and more thorough in its work.

DR. HOWARD MORROW said they had treated several cases with formalin, by brushing it over the surface, but that there was much more pain than by the treatment with the paste. Several cases seemed to have gone on with questionable results, the disease spreading over the nose and forehead. The cases shown were probably not truly malignant. The tendency to malignancy usually increases with age.

DR. D. W. MONTGOMERY said that Dr. Huntington's statement regarding malignancy and superficial cancer of the face and nose is true. There is a difference of degree and of kind. Several years ago a woman, with a rodent ulcer close to the eye, came to the clinic. The ulcer was removed with the knife and a flap from the forehead filled in the incision. A year and a half afterward she returned and could not close the eye. There was paralysis. Metastases had occurred either from the knife or before the operation. She had been previously operated on in Stockton. This case was originally a typical rodent ulcer, but had degenerated and become malignant. Another case similar in character was seen some years ago, which he refused to treat with arsenic. The tumor had grown from a sebaceous gland. It was a nodular epithelioma which was removed by the knife. Four months after, the man returned with a scar too large and extensive for the area involved in the first operation. The scar tissue was taken out and found to be cancerous. He then sent the patient to Dr. Sherman, who removed some nodules from the neck, but whether they were cancerous or not was not demonstrated. The operation was an extensive one and required the removal of a large amount of tissue. The patient has remained well for three years. In such a case Dr. A. R. Robinson would have used paste. There are some cases of cancer of the face where the tumor is cut out repeatedly, which, unless treated by arsenic, formalin, chromic acid, or the *x*-ray, never heal up. There is one danger with the knife, namely, one is never certain as to the exact amount of healthy tissue that should be removed, for the tissues retract and draw away, and yet the operator believes that all the diseased structures have been cut out. He has seen such work frequently done. This is most common in superficial growths of the mucous membranes and of the skin. More surface than the area of the disease must always be destroyed. Arsenious acid seems to have a selective action on cancerous tissue.

Spina Bifida.

DR. H. M. SHERMAN exhibited a specimen of spina bifida, showing a small cyst imbedded in the middle of the tumor. Morton's fluid was used for injection. After the operation the tumor contracted somewhat, and then remained stationary. The child became marasmic, seemed about to die, and was sent home, but subsequently came back for the removal of the tumor, which *pari passu* grew with the child. An incision was made through the skin and fatty tissues, and the sac tied off. He would not use Morton's fluid in many of these cases, though he believes that it does not interfere with the cord, and if it flows into the canal, does no harm. In this case, on account of the very small neck of the cyst and size of the tumor, the fluid was not allowed to enter the canal. Morton's fluid, in small tumors, covered by skin, may be advisable. If, after the use of the fluid, the mass still remains cumbersome and in the way, removal is best.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment will be answered in these columns.]

Treatment of Infantile Colic.

Illoway, in *Phil. Med. Jour.*, states that the treatment of infantile colic is divided into: 1, the immediate relief of the infant, and 2, the removal of the exciting cause. As treatment for the first he gives the following formula recommended by Starr:

R.	Sodii bicarb	gr. xv	1
	Syrupi	ʒss	16
	Aq. menth. pip. q. s. ad	ʒii	64

M. Sig.: One teaspoonful as needed for a child of 1 month.

It may be made more efficient by the addition of two drops of aromatic spirits of ammonia to each dose, or in severe cases, one drop of spirits of chloroform. Or, in severe cases, he advises potassium bromid or chloral as follows:

R.	Potassii bromidi	gr. xv	1
	Chloralis hydratis	gr. viii	5
	Syrupi	ʒss	16
	Aq. menth. pip. q. s. ad	ʒii	64

M. Sig.: One teaspoonful at one dose and repeat if necessary two or three times at intervals of half an hour.

Illoway has found that infants readily become accustomed to the opiates and require increased doses from day to day; consequently he prefers the following formula:

R.	Chloralis hydratis	gr. vi-x	36-66
	Mucilag. acaciæ	ʒi	4
	Lac. asafetidæ	ʒii	8
	Essent. anisi	ʒss	2
	Aq. feniculi	ʒiii	12
	Syr. rhei arom.	ʒiss	6

M. Sig.: One teaspoonful for a dose. To be repeated in one-half hour if necessary, for an infant from 2 to 6 weeks old. For older infants the dose of chloral can be increased if necessary to 1½ grains.

He states that he has found nothing superior to the milk of asafetida for immediate relief and the infants will take it very readily. It is innocuous and can be placed with perfect safety in the hands of the mother or nurse. He gives it in the following combination:

R.	Lac. asafetidæ	ʒss	16
	Syrupi mannæ	ʒiiss	10
	Essent. anisi	ʒss	2
	Syr. rhei aromat.	ʒi	4

M. Sig.: One teaspoonful at a dose.

He states that the administration of a few teaspoonfuls of warm sweetened fennel tea after administering the above will not only do away with the taste in the infant's mouth, but to some extent increases the action of the asafetida.

Dewee's carminative, which was official in the U. S. P. in 1880, and known as mistura magnesiæ et asafetidæ, and which was mentioned by Illoway in his article, is composed of the following:

R.	Magnesii carbonatis	ʒiss	6
	Tinct. asafetidæ	ʒiiss	10
	Tinct. opii	m. xix	1 30
	Sacchari	ʒiiss	10
	Aquæ q. s. ad	ʒiv	128

M. Sig.: One teaspoonful, to be repeated in half an hour if the infant is not relieved. This sized dose is calculated for a child 2 weeks or 1 month old.

Occasionally, he states, in infants with a peculiarly sensitive tract, an opiate may be required and the camphorated tincture answers best prescribed as follows:

R.	Tinct. opii camph.	ʒi	32
	Aq. menthæ pip.	ʒv-ʒvss	160-175
	Syr. rhei arom.	ʒi-ʒiss	32-48

M. Sig.: One teaspoonful, to be repeated in half an hour if necessary. A third dose can be given in two hours.

In colic due to over-feeding or to indigestion, to constipation or to improper food, the suffering of the infant is quickly relieved by the following:

R.	Misturæ rhei et sodæ	ʒss	16
	Spts. etheris comp. (Hoffman)	m. xl	2 66
	Syr. rhei arom. q. s. ad	ʒi	32

M. Sig.: One-half teaspoonful, to be repeated in one-half to three-quarters of an hour for an infant 3 or 4 weeks old. For younger infants the dose is fifteen to twenty drops; for older ones, from one-half to one teaspoonful, according to age.

REMOVAL OF THE CAUSE.

If due to flatulency where the digestion is retarded, Starr advises the administration through the whole colicky period of vinum pepsini, three times a day in fifteen-drop doses.

The following is recommended by Thompson for the same condition:

R.	Sodii bicarb.	gr. iii	18
	Papainæ	gr. i	06

M. Ft. chartula No. i. Sig.: One such after each meal.

Or,

R.	Sodii bicarb.	gr. xlv	3
	Spts. ammon. arom.	m. xv	1
	Spts. chloroformi	m. xv	1
	Syrupi	ʒiiss	10
	Aq. destil. q. s. ad	ʒii	64

M. Sig.: One teaspoonful after each meal.

Incontinence of Urine in Children.

J. Blake White states that the following combination is of good service:

R.	Sodii benzoatis		
	Sodii salicylatis, āā	gr. xxx	2
	Tinct. belladonnæ	m. xv	1
	Aquæ destil. q. s. ad	ʒiv	128

M. Sig.: One teaspoonful in water four or five times a day.

The quantity of sodium salicylate may be increased to double the amount if necessary.

Methylene Blue in Treatment of Malaria.

Dr. M. Dunn states that there is no remedy equal to methylene blue in cutting short malarial fever. He prescribes it as follows:

R.	Methylene blue	gr.ii	12
	Quininæ sulphatis	gr. ii	12
	Ferri carbonatis	gr. i	06
	Acidi arsenosi	gr. 1/50	0012

M. Ft. cap. No. i. Sig.: One such capsule every three hours.

Sodium Persulphate in Tuberculosis.

Garel, of Lyons, as noted in the *Jour. of Tuberculosis*, states that this salt can exert a very remarkable influence over the appetite and digestive organs, and as an oxidizing agent it excels even arsenic and vanadium, and is much less toxic. The sodium persulphate should always be taken on an empty stomach, one and one-half hours before eating. According to Nicholas, one dose of 2½-5 grains (.15-.30) in twenty-four hours suffices. Its administration is indicated only in the earlier stages of the disease to arouse the appetite and to promote nutrition in anorexia and weak digestion.

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Treatment of Acute Gout.

The following treatment of acute gout is recommended by Bartholow:

A sufficient quantity of colchicum should be given to increase the secretion from the skin, the intestinal mucous membranes and the kidneys, but nausea and vomiting should be avoided. Better results are obtained when it is combined with an alkali, as:

℞.	Vini colchici sem.	ʒiii	12
	Spts. ammon. arom. q. s. ad	ʒii	64

M. Sig.: One teaspoonful every three hours in water.

Or,

℞.	Tinct. colchici sem.	m. xx	1 33
	Potassii bicarb.	gr. x	66
	Aq. pimentæ q. s. ad	ʒi	32

M. Sig.: At one dose, to be repeated every three or four hours.

The following combinations are recommended by Sir Henry Halford:

℞.	Ext. colchici radicis	gr. vi	25
	Pulv. ipecacuanhæ et opii		
	Ext. colocynth. comp., ää	gr. xii	75

M. Ft. pil. No. xii. Sig.: One pill night and morning.

Or,

℞.	Ext. colchici rad.	gr. x	66
	Pulv. digitalis		
	Ext. colocynth. comp., ää	gr. xx	1 33

M. Ft. pil. No. xx. Sig.: One or two pills, to be taken three times a day.

Quinin as an Antipyretic.

Egbert, in *Merck's Archives*, favors the combination of quinin with acetanilid as antipyretic in the earlier stages of inflammatory diseases. In his opinion a fluid mixture is preferable:

℞.	Quininæ sulphatis	ʒi	4
	Acetanilidi	ʒi	4
	Elixir arom.	ʒi	32
	Syrupi (chocolated) q. s. ad	ʒiv	128

M. Sig.: One to two teaspoonfuls every three or four hours.

By combining quinin in small doses with other cinchona alkaloids the effect of the dose is augmented. He recommends the following:

℞.	Quininæ sulphatis		
	Cinchonæ sulphatis		
	Cinchonidinæ salicylatis, ää	gr. xxx	2

M. Ft. cap. No. xxx. Sig.: One to two capsules every three or four hours.

Thiocol in Chronic Bronchitis.

Dr. J. A. Goldmann, of Vienna, claims to have obtained splendid results in treatment of chronic bronchial catarrh with thiocol (the potassium salt of guiacol-sulfonic acid) prescribed as follows:

℞.	Thiocol	ʒiiss	10
	Syr. aurantii q. s. ad	ʒiii	96

M. Sig.: One teaspoonful for a child, or one dessertspoonful for an adult, three times a day in milk or coffee.

As a Resolvent of Tuberculous Glands.

Descroizilles, as noted in *N. Y. Med. Journal*, recommends the following as a local application:

℞.	Tinct. iodi	gr. xv	1
	Magnesii sulph.	ʒiiiss	14
	Sodii chloridi	ʒx	40
	Aquæ destil.	ʒivss	144

M. Sig.: To be applied locally on compresses.

A Lotion for Checking Night Sweats of Phthisis.

Herschfeld reports excellent results from sponging the body with the following mixture:

℞.	Balsami peruvianæ	g. xxx	2
	Acidi formici		
	Chloralis hydratis, ää	ʒiiss	10
	Alcoholis	ʒvi	192

M. Sig.: Sponge the patient's body at night.

Acute Bronchitis in Children.

The following prescription is recommended by A. Agramonte

℞.	Solutionis ammon. acetat	ʒiv	16
	Spts. etheris nitrosi	ʒiss	6
	Syrupi ipecacuanhæ	ʒiss	6
	Syrupi senegæ	ʒi	4
	Syrupi limonis q. s. ad	ʒiv	128

M. Sig.: One teaspoonful every four hours.

The above combination will produce elimination from the skin, kidneys and bronchial mucous membrane.

Correction: In last issue, on p. 594, the second prescription under "Treatment of Blepharitis," should have Vaselini ʒiii instead of gr. iii.

Medicolegal.

Seven Thousand Dollars for the Loss of an Eye.—The Court of Civil Appeals of Texas, says, in the case of the De La Vergne Refrigerating Machine Company vs. Stahl, that the verdict here returned of $8000 is much larger than that in any case which it has been able to find, or which counsel seem to have been able to find, involving the loss of an eye, with the usual consequences of such injury. Here the party seeking to recover damages therefor was a young man, a mechanic, 24 years of age, when hurt. And while the court considers $8000 as excessive compensation in such a case, it holds that the loss of an eye is a serious injury, and says that it will affirm the judgment if a remittitur of $1000 be made from the $8000.

Extent of Liability of Seller of Patent Medicines.—The case of West vs. Emanual was brought by a mother to recover from a druggist damages for the death of her daughter, alleged to have been caused by a headache powder, sold to her by the druggist. At the close of her case, and on motion of the defendant, a compulsory nonsuit was entered. This, the Supreme Court of Pennsylvania holds was proper, as the evidence introduced failed, in its opinion, to establish or disclose a cause of action. The powder, it explains, was a patent or proprietary medicine, sold by the manufacturer to drug stores, and by them sold to their customers. And in the sales of patent or proprietary medicines furnished by the compounder of the ingredients which compose them, the court holds, the druggist is not required to analyze the contents of each bottle or package he received. If he delivers to the consumer the article called for with the label of the proprietary or patentee upon it, he can not be justly charged with negligence in so doing.

Prohibiting Additional Hospitals Where Built up.—A Pennsylvania act of 1899 for the protection of public health, prohibits the establishing of maintenance of additional hospitals, pest-houses, and burial grounds in the built-up portions of cities. In construing this, in the case of Commonwealth vs. the Charity Hospital of Pittsburg, the Supreme Court of Pennsylvania holds that it was properly decided in the court below that the phrase "built-up portions of cities" must be understood in its ordinary and popular meaning, and with reference to the object of the act, viz., the protection of the public health, the object of the act being presumed to be to remove supposed sources of contagion from immediate contact with a large population. It also approves of construing the word "additional" to refer to new buildings not already established, and not to mean in addition to the total number then maintained in the whole of the city. It also seems to think that the act is single in its purpose, namely, to protect the public health, and at the same time a general act, for the protection of the public health throughout the commonwealth, regulating the location of the institutions in questions by prohibiting them in all the more populous places of the state, down to a certain line, where the supposed evil does not exist. Nor does it consider that the act deprives a hospital of its property, or the use of it, without due process of law, or denies to it the equal protection of the law, in contravention of the federal constitution.

County Not Liable for Treatment of Pauper Inebriate.—The Supreme Court of Wisconsin holds, in the case of the Put-

ney Brothers Company vs. Milwaukee County, that neither the county board no any county officer has authority under any specific statute of that state to contract with a private person or corporation for the medical treatment of a pauper for what is termed "inebriety," and entail a liability therefor upon the county, his board being simply a minor incident of the treatment. Inebriates may, indeed, it says, be received into county asylums, under certain restrictions, and may be committed to a county poor-house, and the county become liable for their care in whole or in part, but the statutes seem to go no further. Thus, it appearing that the legislature of Wisconsin has provided certain methods by which inebriety or habitual drunkenness may be dealt with, the supreme court thinks it plain that it has excluded other methods, and that the general provisions requiring the county or town to care for and relieve paupers refer to necessary food, clothing, ordinary medical treatment, and the like, and not to medical treatment looking toward the cure of inebriety as a disease. There is, therefore, it insists, no authority resting in any officer or public body to incur liability for such treatment. And such being the case, there can, it holds, be no ratification by the county, as a county can not ratify the unauthorized acts of its agents which are beyond the scope of its corporate powers.

Liability for Aggravation of Latent Disease.—The case passed upon by the Supreme Court of Colorado entitled the City of Denver vs. Hyatt was brought by the latter party to recover for injuries alleged to have resulted from a fall caused by a defective sidewalk. The jury was instructed, in effect, that, if the plaintiff was predisposed to a disease which was aggravated or accelerated by reason of the accident, she was entitled to recover the damages necessarily resulting from such aggravation or acceleration; in other words, that to the extent she was caused to suffer from the effects of a latent disease, above that which she would have suffered had it not been for the accident, she was entitled to recover damages. This, the supreme court holds, was not error. The sidewalks of a city, it says, are for the use of those with organic predisposition to diseases as well as for the healthy and robust and any injuries which the former sustain by reason of defects in such sidewalks, which result in aggravating an already diseased condition, are results for which the city must respond, if otherwise liable. The evidence was clear at the time of the trial the plaintiff was suffering severely from some internal difficulties, which were manifest for the first time shortly after the accident. These troubles were of such a serious nature as to render her practically helpless. What particular internal organs were affected was not clear. The physicians called did not agree upon this proposition. Neither were they a unit as to what might have been the proximate cause of this condition. One of them gave it as his opinion that her internal condition was caused by the fall. None of the others stated directly that it was not, but they stated that they had never known such a condition as she presented due to an accident, or that such condition was not necessarily attributable to the accident. From other evidence it appeared that the plaintiff prior to the accident was a healthy and vigorous woman, and had never suffered from a deranged condition of any internal organs prior to that time; that shortly after the accident, as before stated, she was affected internally. Now, this fact, in connection with the testimony of the physicians, the supreme court thinks, was amply sufficient to warrant the conclusion by the average layman, and to sustain a jury finding, that the deranged internal condition which she manifested at the trial, and which had existed a long time prior thereto, was caused by the fall.

Not a Case for Fee-Bill Charges.—The Supreme Court of Wisconsin says that, upon the question of the value of the plaintiff's services, in the case of McNamara vs. McNamara, the jury seem to have gone widely astray. This was a controversy between son and father, both of whom were practicing physicians. The son claimed $12,000 to be due him for consulting and advising with his father in his practice for a period of five years and ten months, alleging an express promise by the father to pay what such services were reasonably worth. The answer was a general denial, with a counterclaim for money advanced. The son kept no books of account, and during the years in question never made a memorandum of a single case he treated, or concerning which he counseled or advised his father. His guess was that his father called upon him on the average of four times a week, and that he counseled with him as to four cases at each visit. His estimate was that he advised with his father concerning 1000 cases each year, and that his services were worth a little less than $2 for each case. Three physicians were called as experts for him, and were asked a hypothetical question similar to the following: "Q. Doctor, if the defendant in this case consulted with the plaintiff in a professional capacity on an average four times a week, and at each consultation discussed four patients on an average, or say sixteen to eighteen cases a week, and in consultation the plaintiff would prescribe for the different parties, give advice as to the medicine to be given, how much, and the general treatment, and all such other advice and information as is incident to a consultation for treatment, those cases being of a syphilitic nature and venereal character entirely, or 90 per cent. of them at least, what, in your opinion, would such services be worth per year?" One answered, in the neighborhood of $4000 per year; going according to the fee-bill fixing rates for consultation. The second testified that he would charge $4160 per year for such services. The third thought from $2 to $5 a consultation would be a reasonable charge. But that such testimony was of no value in arriving at a correct conclusion, the Supreme Court thinks evident from the fact that the hypothetical question did not cover the material facts in the case. The relation of the parties, the circumstances under which the services were rendered, the time employed, the nature and extent of the consultation, and all the circumstances surrounding the service, it holds, were material in arriving at a reasonable answer. The attempt to apply fee-bill charges to such a situation, it declares, was absurd. On this account, and because it considers that prejudice was aroused and no proper foundation for the recovery allowed was found in the evidence, it grants a new trial notwithstanding that the $11,000 verdict returned by the jury was cut down by the trial judge to $6000.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

New York Medical Journal, February 23.

1 State Care of the Insane. Henry W. Coe.
2 The Normal Declinations of the Retinal Meridians. (Concluded.) George T. Stevens.
3 *The Relation of Scurvy to Recent Methods of Artificial Feeding. J. P. Crozer Griffith
4 The Pathology of Intrauterine Death. (To be continued.) Neil Macphatter.
5 A Simple and Accurate Method of Substitute Infant Feeding. Henry D. Chapin.
6 *Clinical Report of the Use of Chloretone as a Hypnotic. A. A. Stevens.

Philadelphia Medical Journal, February 23.

7 *The Value of Sputum Examinations to the General Practitioner. M. Howard Fussell.
8 *Resection of the Rectum per Vagina. John B. Murphy.
9 Amputation of Both Feet Under Spinal Anesthesia With Cocain. Augustus C. Behle.
10 Sarcoma of the Ribs. C. C. Warden.
11 Congential Umbilical Hernia: Report of a Case, and Table of Cases Hitherto Reported. Homer E. Safford.

Boston Medical and Surgical Journal, February 21.

12 *U. S. Army Pathologic Laboratories in the Philippine Islands. Joseph J. Curry.
13 *Dysenteric Diseases of the Philippine Islands, With Special Reference to the Ameba Coli as a Causative Agent in Tropical Dysentery. Joseph J. Curry.
14 *Uterine Fibroids. Homer Gage.
15 *Dysbasia Intermittens Angiosclerotica (Intermittent Lameness of Vascular Origin). James J. Putnam.

Medical Record (N. Y.), February 23.

16 *Necessity for a More Careful Investigation as to the Cause of Outbreaks of Infectious Diseases. Alvah H. Doty.
17 *A Method of Fixation for Loose Kidneys. Robert T. Morris.
18 *Convulsions With Scarlet Fever, and the Report of a Very Severe Case With Perfect Recovery and Important Deductions from the Treatment. Herman E. Hayd.

Medical News (N. Y.), February 23.

19 *The Value and Accuracy of the Roentgen Method of Diagnosis in Cases of Fracture. Charles L. Leonard.
20 *Pharyngeal Adenoids and Hypertrophied Tonsils. J. H Woodward.
21 A Report of Some Cases of Abdominal Surgery, With Remarks on the Diagnosis of Carcinoma of the Cecum and the Surgical Treatment of Carcinoma of the Liver and Gall-Bladder. (Concluded.) Charles G. Cumston.
22 The Sustaining Treatment of Typhoid Fever, With Special Reference to the Use of Hypnotics. A. H. Buckmaster.
23 Compound Dislocation of the Knee. Walter Lathrop.
24 Nasal Obstruction: Mouth Breathing; Catarrh; Dilators. Norburne B. Jenkins.

St. Louis Medical Review, February 23.

25 *Report of Two Cases Illustrating the Transformation of Senile Warts into Carcinoma. G. Wiley Broome.

Cincinnati Lancet-Clinic, February 23.

26 *Suprapubic Cystotomy for Traumatism, With Perineal Drainage. J. G. Carpenter.
27 Alcohol. George B. Orr.
28 La Grippe. Charles P. King.

Medical Fortnightly (St. Louis, Mo.), February 11.

29 *Note on the Color of Renal and Vesical Stones Relative to Their Detection by Radiography. Reginald Harrison.
30 Diseases of the Lungs and Pleura. (Continued.) Albert Abrams.
31 The Rational Treatment of Erysipelas. Charles W. McIntyre.
32 Puerperal Convalescence. A. D. Wilkinson.

Virginia Medical Semi-Monthly (Richmond), February 8.

33 Diagnosis and Treatment of Some of the Ordinary Fractures, With Report of Cases. Wallace Neff.
34 Hydrotherapy. T. W. Keown.
35 *Suprapubic Cystotomy for Traumatism, With Perineal Drainage. J. G. Carpenter.
36 Some Remarks on the Present Status of the Physician in the United States. Emil Amberg.
37 *Chromic Acid Used as a Cauterant, Followed by Toxic Action. John W. Shaw.
38 The Location of a Six-penny Wire Nail in the Left Bronchial Tube Six Months After Its Inception, by Use of the X-ray, and Its Successful Removal. Samuel Lile.

Bulletin of the American Academy of Medicine (Easton, Pa.), February.

39 American Medical Colleges and Their Betterment. Parks Ritchie.
40 The Use of Clinic Records in Teaching Medicine. W. B. Cannon.
41 Methods of Clinical Instruction and the Management of Clinics. F. C. Hotz.
42 Remarks on Medical Education. Gustav Fütterer.

The Alienist and Neurologist (St. Louis, Mo.), January.

43 The Employment of Physical Methods in the Treatment of Nervous Diseases. (Concluded.) Aug. Hoffman.
44 The Application of Electricity in the Treatment of Some Diseases of the Nervous System. Alex. L. Hodgdon.
45 Some of the Medical and Legal Phases of Insanity. Charles O. Molz.
46 Degeneracy Stigmata as a Basis of Morbid Suspicion. James G. Kiernan.
47 *Autopsychorhythmia, or Repetition Psycho-neurosis. C. H. Hughes.
48 Study of Four Cases of Mental Disease and Four Intracranial Tumors Connected Therewith. J. W. Blackburn.
49 *Malthusianism and Degeneracy. Harriet C. B. Alexander.
50 Dangerous Paranoiacs—With Autobiography of One. J. E. Courtney.
51 Possible Cause of Insanity Among Americans in the Orient. Albert B. Ashmead.

Western Medical Review (Lincoln, Neb.), February 15.

52 *The Pathology of Fractures. Lewis Schooler.
53 *Treatment of Fractures of the Neck of the Femur. John Prentiss Lord.
54 *Some Observations on Compound Fractures. D. S. Fairchild.
55 *The Ambulatory Treatment of Fractures. Frederick Rustin.
56 *Treatment of Skull Fractures. James H. Dunn.
57 *Carcinoma of the Thyroid Gland. A. E. Halstead.

Austin Flint Medical Journal (Mason City, Ia.), January 15.

58 *Colostomy—Inguinal and Lumbar. D. W. Finlayson.
59 Derangements of Circulation and Digestion Due to Overlooked Obstruction in Upper Air Passages—Cases. J. Neimack.
60 Should the Minimum Age of Graduation for Medical Students Be Placed Higher Than Twenty-one Years? M. J. Kenefick.

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61 Chancroids and Chancre. John V. Shoemaker.
62 Sloughing of Bowel and Appendix. D. J. McCaa.
63 Fracture of the Skull. F. W. Frankhouser.
64 Fat: A Dietetic Specific in Phthisis Pulmonalis. Henry Y. Ostrander.

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65 *Some of the Diseases of the Genito-urinary Tract and Their Treatment by Electricity. W. H. Walling.
66 Thermol in Typhoid Fever. Oliver L. Miller.
67 Start the Baby's Diet Right. Floyd M. Crandall.
68 Treatment of Tubercular Abscesses. James K. Young.
69 Fistula in Ano. Samuel G. Gant.
70 Treatment of Acute Catarrhal Conjunctivitis. Walter L. Pyle.
71 Sexual Neurasthenia. D. J. McCarthy.
72 Acute Catarrh of the Intestines (Enteritis Acuta). Boardman Reed.

Love's Medical Mirror (St. Louis, Mo.), January.

73 Care of the Sick. Thomas O'Reilly.
74 The Girl at Twelve. James H. Taylor.
75 The Therapeutic Effect of Iodin Demonstrated by Physiologic Action and Pathologic Demonstration. L. H. Warner.

Interstate Medical Journal (St. Louis, Mo.), February.

76 *Polyarthritis Deformans in Infancy: Apropos of a New Case Observed in a Boy of Five and a Half Months. Dr. Moncorvo.
77 Successful Cataract Operation on a Patient Ninety Years Old. James M. Ball.
78 *Observations on Influenza, Winter of 1899-1890, and the Present Epidemic. Algernon S. Barnes, Jr.
79 A Case of Dislocation of the Head of the Humerus, With Fracture at Its Anatomical Neck. F. E. Prewitt.

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80 A Case of Pancreatitis. F. A. Guthrie.
81 Ether or Chloroform: Which? (Concluded.) William R. Allison.

Indiana Medical Journal (Indianapolis), February.

82 As to the Profession Itself: Its Rights and Privileges. O. A. Rea.
83 One Year's Obstetrical Emergencies. Lucy Woodward Gardner.
84 A Case of Recurrent Placenta Previa. E. J. Kempf.
85 Surgical Clinic. (Prostatic Cancer.) Robert T. Morris.
86 Case of Inverted Uterus of Twenty-one Years' Duration. Orange G. Pfaff.

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87 *A New Method of Hysterectomy. Byron Robinson.
88 Acute Atrophic Paralysis. C. A. Faber.
89 *Pruritus Ani. J. A. Duncan.
90 Diphtheria. Harry A. Lewis.
91 *Common Mistakes of the Physician. C. W. Motts.
92 Practical Experience With Sulphate of Magnesia. A. M. Duncan.
93 *The Doctor. J. A. Kimmell.

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94 Some Points in the Surgery of the Kidney. James F. W. Ross.
95 *Hydatid Cyst of the Tail of the Pancreas. George A. Peters.
96 Case of Dystocia from Uterus Bicornis With Contracted Pelvis. K. C. McIlwraith.

Canada Lancet (Toronto), February.

97 A Historical Sketch of Canadian Medical Education. (Continued.) Walter B. Geikie.
98 Aneurysm of the Descending Portion of the Arch of the Aorta—Rupture. Harold C. Parsons.
99 Report of a Case of Ischio-scrotal Eczema Madidans Rubrum. N. E. Aronstam.

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100 Up-to-date Treatment of Typhoid. J. R. Shellenberger.
101 Good Health. (Continued.) George J. Monroe.
102 Atmospheric Influences. J. L. Wolfe.
103 Therapeutic Uses of Ung. Crede. Max Staller.
104 Sexual Perversions. (Continued.) Drs. Pennebaker and Tripp.
105 *New Treatment of Morphinomania. Maurice B. Ahlborn.
106 A Successful Treatment of Rachitis. Henry Y. Ostrander.
107 Fever. Ben H. Brodnax.
108 The Saline Laxative or Seidlitz Dosimetric Used in Critical Age, or Change of Life, Etc. W. C. Buckley.

Pacific Medical Journal (San Francisco), February.

109 The Microscope in Medicine. S. M. Mouser.
110 The Cause of Heart Failure in Chronic Heart Disease, and Its Medicinal and Dietetic Treatment. Alfred W. Perry.
111 Dr. Havelock Ellis on the Psychology of Sex. R. W. Shufeldt.
112 How to Feed the Sexually Impotent. V. G. Vecki.

Occidental Medical Times (San Francisco), February.

113 An Address in Memory of Prof. R. Beverly Cole. Wm. Watt Kerr.
114 Angioma of the Internal Jugular Vein. Plugging of the Lateral Sinus and Ligation of the Vein. W. S. Thorne.
115 Indications for the Use of Protargol in Gonorrhea. A. B. Grosse.
116 The Plague. W. H. Kellogg.
117 *Results of Ligation of One Ureter. Minora E. Kibbe.
118 Demonstration of Patients Treated for Cancer With Arsenical Paste. Douglass W. Montgomery.
119 Pernicious Anemia. E. E. Kelly.

Texas Medical Journal (Austin), January.

120 Some Advances Made in Our Knowledge of Immunity and Protective Inoculation. Henry W. Harper.

Texas Medical News (Austin), January.

121 Double Hare-lip Complicated With Projections of the Intermaxillary Bone, Blandin-Roses' Operation. Report of a Case. Joe S. Wooten.
122 Cocain Anesthesia by Lumbar Puncture. William Keiller.
123 Six Weeks With English Surgeons. R. H. T. Mann.
124 The Cause and Prevention of Malarial Infection. R. W. Knox.
125 Malarial Hematuria. Walter T. Brown.

American X-Ray Journal (St. Louis, Mo.), February.

126 The Development of the X-ray Plate. J. N. Scott.
127 *A Review of Cases of X-ray "Burns." E. A. Florentine.
128 Gall-stones Under the X-ray. J. Rudis-Jicinsky.
129 Case of Tissue Injury by X-ray and Result of Prosecution in Court. L. A. Perce.

Georgia Journal of Medicine and Surgery (Savannah), January.

130 A Critical Survey as to the Etiology and Transmission of Malarial Fevers Through Infection by Mosquitoes. Edward N. Liell.
131 *Malaria—Its Etiology, Symptoms and Diagnosis. H. Stuart MacClean.
132 Etiology and Diagnosis of Malaria. Albert Woldert.

International Journal of Surgery (N. Y.), February.

133 Brief Consideration of the Etiology of Malignant Growths. R. H. Cowan.
134 Nose and Throat Work for the General Practitioner. (Continued.) George L. Richards.
135 Treatment of Fractured Patella by Operative Measures. F. H. McNaught.
136 Regional Minor Surgery. (Continued.) George G. Van Schaick.
137 Practical Suggestions Upon the Treatment of Rectal Diseases. James P. Tuttle.
138 The Technique of Surgical Gynecology. (Continued.) Augustin H. Goelet.
139 Three Laparotomies for Penetrating Wounds of the Abdomen. E. W. Walker.
140 Some Remarks on Tetanus. J. J. Thomas.

AMERICAN.

3. **Infantile Scurvy.**—The etiology of scurvy in infants has been studied by Griffith, who reviews the statistics and also reports a number of personally observed cases. The points of interest to which he calls attention are: that there is a generally accepted view that patented foods often produce infantile scurvy and some cases show that recovery may follow their withdrawal without other treatment. Whether this is because they are deficient in certain ingredients or whether they commonly contain or are derived from starch, remains to be determined. The cases also indicate that the sterilization of milk is capable of producing scurvy though this is a less prominent etiologic factor. It is shown that scurvy can develop on a diet of milk, which has not been long heated or which is even raw, and in which case we are lead to suspect the action of a low percentage of proteids. Some of the cases also show that fruit juices may produce a cure without any change in the diet. In conclusion he remarks that while there are dietetic factors, the individual element is markedly present in this disease; what is one baby's meat is another's poison.

6. **Chloretone.**—Stevens gives his experience with this drug and concludes that we have in it a special hypnotic of moderate power, rarely giving rise to unpleasant after-effects, but of which a tolerance is quite readily acquired, and it should be adopted for use in cases of insomnia, unattended with pain, high fever, or pronounced nervous excitement.

7. **Sputum Examinations.**—Fussell insists on the necessity and value of sputum examinations, describes the technique, and discusses their practicability for the average practitioner. To show their value three cases are reported. He maintains that it is perfectly practicable for any physician possessing a microscope with a moderately high power, or with an oil-immersion lens, to make the examinations himself, and describes the simpler procedure.

8. **Rectal Resection Per Vaginam.**—Murphy describes and illustrates his method of excision of the rectum through the vagina, and reports five cases. His conclusions are that the advantages offered by this route are: 1. The sacrum and posterior bony wall of the pelvis are not disturbed. 2. The field of operation is as extensive and the anatomical parts as accessible as in any transsacral operation. 3. The peritoneal cavity is opened in both the vaginal and sacral operation, and in neither is it a source of great danger. 4. The diseased tissue is more accessible for inspection and the extent to which the operation may be carried upward is as great, if not greater, than by the sacral route. 5. The peritoneum may be drained freely through the vagina. 6. A perfect end-to-end approximation either by sutures or with the use of a button may be secured. The preferable method is by interrupted silk suture because, as there is no peritoneum on the sphincteric segment, failure of union with the button is to be feared. 7. The sphincter is retained and the peritoneal body is restored. There is a diminished action of the levator ani muscle. 8. When operation is complete, the parts are practically in their normal position. He remarks that he has performed the same operation on male cadavers and found, by splitting the sphincter directly through the median line anteriorly and posteriorly cutting back to the coccyx and opening the retrovesical fold of the peritoneum, practically the same field for operation may be opened as in the female, several inches of bowel be dissected and end-to-end union secured. Either anteprocteal or postprocteal drainage may be used. The cut ends of the sphincter are united anteriorly and posteriorly and the lateral nerve-supply on the other side is not disturbed.

12. **Army Pathologic Laboratories in the Philippines.**—The army pathologic laboratories on hospital ships and at Manila are described by Curry, who gives general remarks on the diseases of the Philippine Islands. He speaks of the special embarrassments in such laboratories in the tropics, on account of the frequent contamination by air organisms and the rapid putrefaction processes in cadavers. The bacterial flora of the tropics is, he says, as rich and varied as its botanical flora, and a great many organisms are met with that were hitherto unknown. As regards the climate, he thinks the Philippines are not specially unhealthy for a tropical region.

13. **Dysenteric Diseases in the Philippines.**—Out of over 20,000 cases treated at the First Reserve Military Hospital at Manila, there were 1999 cases submitted for dysentery and 2186 for diarrhea, a total of 4185 or over 21 per cent. of the total. About one-half of the cases of diarrhea were probably dysenteric, making a total of 3000 cases, of 15 per cent. of total admissions. Dysentery is responsible for the highest mortality among the troops and is, moreover, a persistent disease occurring repeatedly after the first attack. It is generally traced to impure drinking water. Of the coincident affections he mentions malaria, and also typhoid fever, pneumonia and tuberculosis which appear in a small percentage. The amebic type of dysentery is the predominating one, occurring in a little over 60 per cent. of the cases of those that come to autopsy, and is responsible for more deaths than all the other types combined. Abscess of the liver has been found in about 16 per cent. and general peritonitis in about 25 per cent. due to perforation of ulcer or rupture of the abscess. In addition to this there was general peritonitis in one case, without perforation of the bowel, the infection passing through the thin base of the ulcer in the cecum. In all cases of abscess active ameba were demonstrated both in the abscess contents and the contents of the large intestine. The question as to whether the ameba is of primary or secondary origin is discussed, and the author favors the view that it is the principal causative agent in at least one type of the disease. In several cases the bacillus of Shiga and Flexner has been found in cultures. He has not had much experience with the antidysenteric serum of Kitasato, though its results are in Japan believed to be of value. He recognizes two distinct types in the Philippines, the amebic dysentery and the acute dysentery, in a number of which the Shiga bacillus was found. In addition to this there were cases of subacute and chronic dysentery in which neither the amebæ nor bacilli occurred.

14. **Uterine Fibroids.**—Gage reports a method which he has followed in 50 cases. He has resorted to dilatation, and

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curettement in 5, with other measures to some extent, and he has operated by morcellation for submucous fibroids projecting into the uterus in 15 cases, and while he has had no deaths he has had serious septic complications in several. In 3 cases he has removed the tubes and ovaries with good results. In 2 he removed the uterus by the vaginal route, one following an unsuccessful curettement and the other for supposed carcinomatous degeneration. He would not choose the method for this purpose, but it is applicable for the removal only of small tumors and is not so satisfactory as the operation from above. He has performed abdominal hysterectomy 25 times with 3 deaths; two of them he thinks were due to defects of technique, in lack of knowledge of any other source. His method of operating is to cut the broad ligament between two clamps down to the attachment of the round ligament, divide the peritoneum through the uterus from side to side at this level and strip it back keeping close to the uterus until he can feel the uterine arteries between the peritoneal folds, secure with silk ligatures and then amputate the cervix. He cauterizes the divided uterine canal, securing the ovarian arteries and vessels of the round ligaments and finally uniting the anterior and posterior layers of the peritoneum by continued sutures from one side of the pelvis to the other. The most important steps are, he thinks, the absolute control of all hemorrhage about the stump so that there should be no accumulation of clotted blood from the space between the stump and its new peritoneal covering and the treatment of the uterine canal. During the past he has tried, whenever possible, to leave at least one ovary, but confesses failing to observe any special advantage in the results. The operation with its progressively diminishing mortality and completeness is almost ideal when performed for the relief of symptoms definitely known to be due to fibroid. It would be ideal, but for the fact that it unsexes the patient, and this makes it objectionable in young women. As regards myomectomy, the only great danger is from hemorrhage and the supposed difficulty of controlling bleeding from torn uterine muscles, simply a lack of technique, and every year is bringing additional testimony to the unsoundness of this objection. He performed myomectomy only six times, but with the very best results. It is especially applicable in cases of young women after it is made clear that the fibroid is steadily growing.

10. **Dysbasia Intermittens.**——This condition, which consists in intermittent lameness following exercise, is described by Putnam, who reports a case, and confesses to feeling a little doubt as to the correctness of the generalization of Erb and Charcot that the condition is due to the fact that when the muscles are in use a very unusual supply of blood is needed, which can not be supplied on account of arterial defects, or that vascular cramp is induced. In his case a careful examination of the patient's arterial circulation in the involved foot was made before the treatment was begun, and afterward, and no special change of conditions noted. He is inclined to think that perhaps vascular spasm is the best explanation. The treatment employed by him was galvanism followed by faradism following the indications laid down by Erb. After the bath treatment had been abandoned, the patients undertook to give himself a kneading and massage of the calves of the legs, and improved. Possibly the influence of warm weather had something to do with the improvement.

16. **Causes of Infectious Diseases.**—Doty pleads for more careful research into the origin of any case of infection, and, if well marked cases can not be found, says we should look for mild or convalescent ones. The physicians should be more careful to disinfect everything that the patient had used or had. He is satisfied that the clothing of well persons and cargoes of ships are rarely the means of transmitting disease, but the danger from mild, ambulant and convalescent cases which pass unnoticed should be recognized.

17. **Floating Kidney.**—Morris describes the operation performed by him for the last two years, for which he does not claim anything excepting that it seems rational and has been up to the present time the most desirable in its results in his hands. In this operation a flap of capsule including the larger part of the mesial surface of the kidney is incised with a scalpel and the flap of capsule then stripped up from the parenchyma but remaining attached at the convex border of the kidney. The flap of capsule is drawn through a slit in the psoas muscle or in the quadratus muscle, as one chooses, and is there sutured in place. This brings bare parenchyma also in contact with the psoas or quadratus fascia, where it forms a firm connective tissue attachment. The operation avoids the necessity for passing the suture through the parenchyma of the kidney and he has had no reports of the recurrence of the difficulty in his cases up to the present time. In his general remarks on floating kidney he maintains that this condition is so common that probably every practitioner has a number of patients under his care suffering from this cause. The reason it is not more often clearly recognized at the autopsy is that the organ returns to its place and becomes fixed there by rigor mortis. In some instances the condition gives no trouble, in others there are distressing complications; in others still those of general enteroptosis. Cases for operation, according to his view, are those which continue to produce important symptoms after the diagnosis has been well made and abdominal support and general medical treatment tried without effect. The method of examination practiced by him is that prescribed by Israel. A line is drawn parallel to the middle line of the abdomen, distant from the middle line of the abdomen as far as the point in the middle of Poupart's ligament and extending to the costal border. In examining the right kidney the fingers of the right hand are placed on the upper extremity of this line, the left hand at the same time lifts the quadratus lumborum muscle. The fingers of the right hand are depressed more and more with each expiration of the patient until the lower pole of the kidney can be felt or at least approximated. The patient is then asked to take a deep inspiration, when the kidney, if loose will slip out beneath the examiner's fingers very distinctly and can often be carried to a point below the navel. The loose kidney commonly falls into its normal position with the patient in a recumbent position, but often is discovered at some other point in its line of excursion.

18. **Scarlet Fever.**—The subject of convulsions with scarlet fever is discussed in connection with a case which is elaborately reported by Hayd. He summarizes his deductions from this case, in substance as follows: 1. Every case of scarlet fever is a law unto itself. 2. Convulsions may and do occur when least suspected. 3. The urine should be frequently examined, not only as to specific gravity and albumin, but urea calculations should be often made. 4. Mere specific gravity is not a sufficient indication as to the amount of urea eliminated, as yet it may be retained in poisonous quantities; moreover, a large quantity of water may be voided with fair specific gravity and yet convulsions occur. 5. Albumin need not be present, or only a trace can be found, and yet convulsion occurs, but it will be found perhaps in great amounts following it. 6. Only the most digestible food and nourishment should be given, if possible such as produces little gastric and intestinal putrefaction, the best being milk, because the amount of toxalbumins and putrefactive residue is reduced to a minimum. 7. If milk can not be digested or will not be taken, no food should be administered for days by the stomach, but the patient be allowed an abundance of water and nourishment by nutrient enemata. If broths are borne, chicken broth made according to the directions of Dr. Pryor of New York, as found in his book, is a pleasant and nutritious food. 8. In any severe case of convulsion only a small amount of food by the stomach should be given at any one time, and frequent urea calculation should be made to see that the proper quantity of urea is eliminated, and if it is not increased after the ingestion of food, the food must be withheld or such be substituted as will not interfere with urea excretion. 9. If gastric irritability exists, give the stomach and bowels, rest, which also rests the kidneys and permits them to rehabilitate themselves either in function or to develop new renal secreting cells. Scarlatinal nephritis is a desquamative process and epithelial cells are no doubt often quickly formed. 10. The amount of urea passed in twenty-four hours differs in different individuals and it may be

roughly stated that an excretion of 10 gms., or 150 gr. of urea for a child 10 years old, weighing 60 pounds, will protect her from convulsions. His patient is passing over 500 gr. every twenty-four hours. 11. Hypodermoclysis is a very valuable and safe method to introduce water into the system, and, with the proper precautions, as much as two or three pints may be used without danger of severe abscess formation. Decinormal salt solution should be used, first boiled, and the skin be thoroughly disinfected by washing with soap and brush, and again with a bichlorid solution—1 to 2000—and subsequently with alcohol. The needle and fountain syringe, with tubes, should be placed in boiling water and boiled for a few minutes to ensure perfect cleanliness. 12. Enteroclysis or the introduction into the bowels of a number of quarts or even gallons of water, with a temperature ranging from tepid water to 80 degrees, if much fever be present, should be employed once or twice during the twenty-four hours. 13. Strychnin and digitalin are the most valuable heart stimulants and brandy the best food and diffusible stimulant.

19. **X-Ray Diagnosis.**—The correct mechanical principles employed in securing the data on which the diagnosis of the Roentgen method is based, insures, according to Leonard, absolute results when the technique of its employment is correctly understood and the data obtained by its use rightly interpreted. The advantages of the method are not only the recognition of the disease known to be existing, but multiple fractures are often shown where only one was suspected. The exact line of fracture is determined and more correct information is obtained without manipulation, saving the patient unnecessary pain and causing no further traumatism to the tissues. This increased facility in diagnosis is not the limit of its usefulness, however, the accuracy of setting and efficiency of fixation apparatus or other methods of treatment can be demonstrated and the necessity of otherwise operative interference can be diminished. The Roentgen method has created a higher standard by which the treatment of fractures may be judged and practitioners can not be said to have employed all the means and knowledge without the use of the *x*-ray. The skiagraph has been admitted as evidence and suits for damages will undoubtedly be based upon its evidence. The safety of practitioners lies in its employment to prove that reduction and fixation have been accomplished or, if not, proof that he suggested it to the patient and was refused its employment. It can never, however, form a basis on which the amount of damages is assessed, which will depend on functional disability and loss which the patient has sustained. Whenever the skiagraph is introduced as evidence the defendant should demand the privilege of having a similar examination and should employ expert testimony to fully explain its meaning to the jury. One great advantage of the method is the possibility of establishing an absolutely negative diagnosis, which is valuable in many cases.

20. **Adenoids.**—The mischief due to adenoids consists, according to Woodward: 1, in the excitation of aural disease; 2, their effects on the patient's general health. He reviews the symptoms dependent on the condition, their development, and the accessory symptoms, including in the latter chorea, epileptiform attacks, and deafmutism. As regards treatment, he thinks we should not wait for the retrogressive hyperplasia which occurs during adolescence, because, prior to this, serious damage may be done. The operation, he claims, is not necessarily dangerous, and while hemorrhage is profuse it ceases spontaneously. Anesthesia is, he thinks, the greatest danger, and he avoids the use of it when he can. The only after-treatment required is cleanliness of the wound, cod-liver oil, iron and fresh air. He also remarks on the condition of hypertrophy of the faucial tonsils and operates for their removal. Up to the present time he has not seen a patient in whom tonsillotomy had been done who had not derived some benefit from the operation.

25. **Carcinoma from Senile Warts.**—Broome reports two cases of carcinoma developing from senile warts, one of which was treated by local measures which seemed to be so effective that he concluded the carcinoma was practically destroyed and closed the breach made by the carcinoma, by plastic operation. Union took place by first intention. The cosmetic effects were entirely satisfactory and there is no evidence of return, though only three months has elapsed. He discusses the etiology of these malignant growths, and suggests the probability of the parasitic nature of the growth.

26. **Suprapubic Cystotomy.**—After giving the history of the operation, Carpenter reports several cases and remarks in regard to the method. He says, bend, do not tie down the penis when the bladder is distended. Cut down, not up, in opening the bladder in suprapubic cystotomy. Feel for the knot of the urachus, and cut below toward the neck. The peritoneum does not extend below this point. The danger of over-distending the ulcerated, attenuated, sacculated bladder is mentioned and, if necessary, he advises to cut open the peritoneum, having the incision repaired after the pathologic condition has been removed. The operation should be done to remove calculi, foreign bodies, tumors, for stabs, gunshot wounds, rupture of bladder, drainage in the bladder, the passage of urine in stricture, etc. In stone cases the operation of election is Bigelow's, but the stone may be too hard to crush. For polypus, papilloma, removing hypertrophied lobes of prostate, foreign bodies, etc., for cure of peritoneal fistula, which can not be otherwise cured, the suprapubic is the best and most successful method. One must not forget to keep in the mesial line and avoid veins in the prevesical space. It may be necessary to divide, transversely, the thick fascia forming the linea alba close to the symphysis pubis, also to divide the recti muscles transversely if the resistance is so great as to interfere with the rest of the operation. The bladder, after having been opened, is held by fixation forceps, or sutured to the wound, as deemed best; one or two fingers in the rectum to open the posterior wall may be necessary. Hot water is the best agent in bladder surgery. When the bladder is healthy and the wound aseptic the bladder wall may be sutured and get preliminary union, but if it is diseased or engorged no attempt should be made to suture it. Drainage should be used if the case demands, and the patient kept scrupulously clean.

29. **Renal and Vesical Calculi.**—Harrison remarks that it would be interesting to know if observations have been made as to whether the color of the urinary calculus apart from its chemical composition exercises any influence on the shadow cast by the *x*-ray. It has occurred to him that if such were the case, it would be possible to bring this about artificially. In a recorded case he found that a white phosphatic stone was deeply stained blue by the patients having been treated previously with a course of methylene blue for cystitis, and he has seen other similar cases since and wondered whether different degrees of intensity in the radiograph of oxalate of lime calculi were explainable in this way. He suggests this as a practical point. The stone detected by radiography may permit of a delay in operating, without detriment, which is an advantage.

35.—This article also appears elsewhere. See ¶26, above.

47. **Autopsychorhythmia.**—This is the name given by Hughes to a symptom of repetition of certain words and phrases, a sort of repetition psychoneurosis. He refers to a number of cases and compares it with the echolalia and other symptoms. The form of insanity toward which this condition tends is, in his opinion, that in which imperative conceptions predominate or have predominated in the initial stage. Its pathologic lesion is evidently in the mind area of the brain cortex, not focalized exclusively in the speech area. It is a psychic and not a purely psychomotor involvement.

49. **Malthusianism.**—Alexander discusses Malthusianism and its influence on civilization, maintaining that, on the whole, it has been a decidedly potent factor in the advancement of the race, notwithstanding the fact that Malthus underestimated the increase of subsistence resultant on the ultilization of waste and over-estimated the human rate of increase.

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37. **Chromic Acid.**—Shaw reports a case in which chromic acid was used for condylomata of the genitals, and produced decided toxic symptoms, nausea, rapid pulse, cold extremities, perspiration, etc. The dressings were immediately removed, but the conditions continued for thirty-six hours and then the patient gradually returned to her normal state. He finds little literature on the subject in text-books, though a similar case with more disastrous results was reported a few years ago by Dr. J. Wm. White, the strength of the solution in both cases being the same, 100 gr. to the ounce.

52.—See abstract in THE JOURNAL of January 12, p. 126.

53.—Ibid.

54.—Ibid.

55.—Ibid.

56.—Ibid., p. 127.

57.—Ibid., p. 126.

58.—**Colostomy**—Finlayson argues for the benefits of colostomy, maintaining that it should never be performed without fully informing the patient as to the consequences, but also holding that it will relieve the conditions in hopeless cases, make life comfortable and even prolong it. In many non-malignant cases it may often make life endurable and cause little inconvenience or embarrassment. He favors the operation on the left side. The special point is that the diagnosis and prognosis must point unerringly to its necessity, and it should be performed as low down as possible so that the nutritive processes may be nearly completed. The technique of the operation is not described.

65. **Electricity in Genito-Urinary Disease.**—The disorders in which Walling thinks electricity valuable are impotence, catarrhal condition of Cowper's glands, spermatorrhea, enlarged prostate, varicocele, hydrocele, stricture, gonorrhea and syphilis. In cases of sexual weakness anesthetic areas receive the cathode and all irritable portions the anode whether the current be galvanic or faradic. Sittings may ge given of fifteen minutes three times a week. In enlarged prostate he uses potassium iodid solution directly to the gland by the cathode, to produce cataphoresis. In hydrocele he claims electrolysis presents a perfectly satisfactory method of treatment. The technique of the different methods is given in detail.

76. **Arthritis Deformans in Infancy.**—Moncorvo reports a case of a child 5 months old showing this condition, and notices the literature. He thinks there is no doubt as to the influence of heredity and rather favors the microbean theory of the condition. The symptoms are noted. The affected joints are mostly symmetrical and painful; acute and subacute conditions become attenuated and are followed by articular lesions which have a slow course or remain stationary. There is more or less marked anemia and he has also found a sensible diminution of hematin, and reduction of hemoglobin which, according to Bannantyne, reveals the action of the toxins developed by the bacilli. Symmetrical invasion of joints makes a clear distinction from gout. In infantile polyarthritis the general character is benign and a happy termination is the rule, though in some cases it may last into adult life or old age. As regards treatment, iodotherapy and electrotherapy are the surest means to combat infantile polyarthritis deformans.

78. **Influenza.**—Barnes compares the epidemic in St. Louis, in 1899 and 1900, with that of the present winter, which last he considers is causing more painful symptoms and more general complications. The most usual symptoms are general malaise, stabbing sensation in the region of the tonsils, with aching bones, and frontal headache. The other symptoms that may occur are in some cases complete aphonia, present for several days, cough, hoarseness, frequently pain in the chest and abdominal muscles, and the tongue is white but not furred, the breath very offensive, but the marked odor of the body noted in the epidemic in the preceding winter is not present. The bowels in most cases are normal; the urine dark, fever slight, cervical glands not enlarged, ear symptoms in some cases quite severe, though not so general as last winter. The treatment is largely symptomatic: quinin in small doses, with kryofin to relieve the pain, heroin for the cough, in 1/12 gr. doses every three hours, with ammonia chlorid and pilocarpin. The usual cough remedies do not seem to be effective. Local treatment is of great value. As to prevention, he advises the patient to remain indoors after dark, eat wholesome digestible food and dress properly, keep the bowels open, use but little liquor, and to secure plenty of rest and fresh air.

87. **Hysterectomy.**—Robinson reports the method he follows after performing vaginal hysterectomy, which he thinks has its advantages, leaving the oviducts and ligaments *in situ* and the utero-ovarian vascular circle intact. The patients make excellent and painless recoveries. The operation is performed as follows: The cervix is seized by traction forceps and a circular incision through the vagina is made about the neck, after which the anterior and posterior uterine surfaces are freed, and the oviducts, ovaries and broad ligaments also freed from the abdomen if necessary. Then, with a strong pair of scissors, the uterus is split from the cervix to the fundus about one-half inch from the lateral uterine border toward the median line on each side. The external uterine tissues of the lateral segments thus left *in situ* are closed by bringing together the cut peritoneal edges with sutures about a half inch apart. These four or five sutures applied to the lateral uterine segment readily control the slight hemorrhage from the lateral arteries of the utero-ovarian vascular circle. The sutures are subsequently removed. The operation, therefore, consists in the removal of about three-quarters, or two-thirds of the median portion of the uterus, including its cavity, leaving only one-eighth or one-fourth of the lateral border *in situ* on each side. The closer the myometrium is cut away from the endometrium the more and more is its hemorrhage of a capillary nature and more easy to control. The operation saves all the internal genital organs intact, excepting the central portion of the uterus, and by using silver wire for sutures may be done almost without pain or suppuration.

89. **Pruritus Ani.**—Duncan remarks in regard to this condition: that the cause, whatever it may be, whether chronic eczema, herpes, constipation, diabetes, worms, over-mental strain and worry which is a frequent cause, may have to all be looked after to relieve the symptom, and he mentions amongst the direct remedies to be used, local applications of hot water, carbolic acid, lotions, and one that he has never seen mentioned elsewhere, collodion. He says: separate as widely as possible the folds of the skin and mucous membrane and then apply common collodion freely. This will relieve, for a time, all the itching.

91. **Mistakes of the Physician.**—The mistakes here noted by Moots are those made by many of us in adopting the profession, mistakes in regard to personal disposition, pessimism, etc., and he thinks, too, about one-half of the physicians pay too little attention to their dress and toilet and to the condition of their offices. Too many are practically loafers, many are too hasty, and many violate good principles in obstetrics by too early resource to instruments. Other errors are lack of care in examinations, and especially the lack of business methods. Physicians should be charitable and have a brotherly feeling toward other physicians.

93. **The Doctor.**—Kimmell's paper, like the one preceding tells what the doctor should do. He should have sufficient mental caliber in the first place, and should be a more broadly educated man, should be industrious, cheerful, and of high principles.

95.—See abstract in THE JOURNAL of January 5, p. 57.

105. **Morphinomania.**—Ahlborn reports a case in which he treated the morphin habit by giving heroin, as it occurred to him that as a morphin derivative with a sedative and stimulating action, it might be of some use. The patient being accustomed to the hypodermic method of using morphin, he put him on hydrochlorid of heroin, giving it in the form of 1/12 gr. tablets, allowing one of these for each ½ gr. of morphin he had been in the habit of taking. As he was consuming about

12 gr. of morphin a day, this allowed him 2 gr. of heroin every twenty-four hours. Strychnin was also kept up and the patient treated for the relief of an existing urinary trouble. The patient declared that he did not need morphin under this treatment; he slept better, and it was continued for about a month, when no craving for the drug being manifested, it was decided to cut down the dose gradually and it was reduced one-half without producing any unfortunate symptoms. The patient had recovered his spirits and had no drug craving whatever. One month later the amount was reduced to about .25 gr. a day, and, in the course of two weeks it was entirely withdrawn, the tonic treatment being pushed. It is now more than seven months since the patient was discharged and he has not returned to his old ways. The second and third cases were treated in the same way. The author claims that in these cases at least it has been a very valuable drug. He claims that the cases cited show that heroin will take the place of morphin without injurious effects, satisfies the craving and allows the withdrawal of the drug without the bad effects commonly observed.

117. **Ligation of Ureter.**—Kibbe reviews the opinions of authorities in regard to ligation of one ureter, and finds that two general propositions may be deduced: 1. That life is possible in man after ligation of one ureter. 2. Given a local disease of the distal portion of the ureter of considerable extent, without infection in it or the kidney on the other side, where anastomosis is impossible, simple ligation rather than the severer operation of nephrectomy would seem worthy of consideration.

127. **X-Ray Burns.**—Florentine reviews the question of *x*-ray burns and the precautions which have been recommended. The grounded screen is, he thinks, more or less effective, though not absolutely so, and he suggests the possibility of individual idiosyncrasy as affecting the incidence of these accidents. He suggests that there is no known means of absolute protection, but he gives a list of those which have shown a tendency to help the situation: 1. Short exposures, which are perfectly satisfactory with our present approved apparatus and materially reduce the danger. 2. Distance between the active tube and part to be exposed; at least eight inches with the improved apparatus is equally effective and adds sharpness and detail to the negative. 3. Always avoid exposing the part frequently unless the rays are used for their therapeutic results, then the tube should be regulated according to the best knowledge of the effect to be produced. 4. Where much density is to be overcome and exposure necessarily long, use the protective screen impervious to the dangerous rays. 5. The vacuum should be as high as required to give the best results with the shortest exposure. He also claims that injuries were more frequent immediately following the earlier use of the *x*-ray than now, and by using the precautions mentioned and with our improved apparatus these may be almost entirely eliminated. It makes no difference whether a Ruhmkorff coil, a Tesla coil, or a static machine is used, their improper use invites danger. There is a needless alarm among the laity and we should deal with our patients honestly and wage an active war against fake institutions, and quacks and characters that swindle.

131.—This article has appeared elsewhere. See THE JOURNAL of February 9, title 30, p. 403.

FOREIGN.

British Medical Journal, February 16.

The Heart-Index Interval in Aortic Regurgitation. PAUL M. CHAPMAN.—The prolonged interval in aortic insufficiency has been studied by Chapman, who accounts for it by the slow propagation of the pulse wave in these cases. Increased arterial tension tends to obliterate this delay, while diminished arterial tension makes it more manifest. The hypertrophied heart also contracts more slowly, owing to the delay of propagation of the nervous impulses through the enlarged muscles; this he considers a new point noticed by himself. He discusses the question at length, giving evidences for these conclusions, and believes that they are firmly established.

Effects of Muscular Exertion, Sudden and Prolonged, in Young Adolescents. W. COLLIER.—In attempting to ascertain the effects of severe muscular exertion, we have, Collier remarks, to study first the physiologic changes set up by moderate exertion. The effects of exercise on the two most important organs, the heart and lungs, are first noticed. The first effect of exercise is to increase the force of the heart's beat and cause an active congestion, which swells the pulmonary capillaries and diminishes the air space. As the muscular effort continues, it increases the amount of CO_2 that is thrown into the blood, stimulating the respiratory center of the brain; inspiration becomes deeper and more frequent and more air is thrown into the air cells, impeding the circulation in the pulmonary capillaries, and the heart beats more and more quickly, but each ventricular systole is less vigorous and we have passive congestion of the lungs, which is a marked obstacle to the elimination of CO_2. This can not be done beyond a certain point, as too much CO_2 in the blood brings about the cessation of all effort. We have here, therefore, physiologic emphysema. In athletes who have been through years of athletic competitions, we often find the following signs of physiologic emphysema: 1. Absence of apex-beat either on inspection or palpation, while at rest. 2. Absence of all superficial cardiac dulness on account of the large emphysematous lung covering the heart and separating it from the thoracic wall. 3. A hyperresonant note above the clavicles and above the sternum. If the cause of this is repeated too often, or kept up too long, it is quite possible that it may become converted into a pathologic condition, leading in later life to the same consequences as we have from old-standing bronchitis and chronic asthma. Another effect is to throw a great strain on the right side of the heart, since passive pulmonary congestion implies overdistention of the right ventricle. The author calls attention to a form of heart strain not uncommon among girls and young women, who do much running up and down stairs. It is generally associated with a certain amount of anemia, and probably due to atonic conditions of the heart muscle induced by impoverished blood. The most prominent symptom is breathlessness on exertion and great frequency and tumultuous action of the heart. Girls about the ages of rapid growth with marked functional changes may have minor forms of dilatation of the right side of the heart, especially liable to occur with overexertion. The effect of severe muscular exertion on the left side of the heart is to produce a physiologic hypertrophy, and if this is overdone there is danger in it. Insomnia is not an uncommon troublesome symptom with this form of physiologic hypertrophy. Collier advises that boys in schools should be examined before being allowed to take part in athletic exercises, and especially in the adolescent periods and when they are growing rapidly. Cases of severe and sudden breakdown in well-fed boys and college students are rare. The danger lies in the future, some twenty years or more after. He notes the prophylaxis, advising physical examinations of school boys and students, but says that the danger is less in this class than with the lower middle classes outside of public schools. In concluding his paper he remarks on the physical standard of the army being too high. Many men are rejected on account of insufficient weight or chest measurement. A long, narrow chest may have equal lung capacity with the broad one, but the tape only measures the horizontal diameter; it takes no cognizance of the vertical. Intermittent albuminuria is mentioned, and Collier explains it on the ground of some defect in the walls of the blood-vessels of the kidney. The condition often gives rise to no special trouble, and the treatment for it seems to do very little good.

Cases of Adult General Paralysis with Congenital Syphilis. R. PERCY SMITH.—The possibility of general paralysis in adults being due to the same cause as when it occurs in young persons suffering from congenital syphilis is noticed by Smith, who reports two cases: 1. The full account of a patient of Dr. Mott's, mentioned by him in his Croonian lecture on degeneration of the neuron as possibly of this nature. 2. The other one was a personal observation of his own. In both

cases they were women of 28 and 24 years respectively. There was no suspicion of acquired syphilis, but little doubt as to paternal. The paretic symptoms were characteristic.

Wind Exposure and Phthisis. CHARLES A. DAVIES.—The paper by Gordon, of Exeter, in which he attributed the great frequency of phthisis to wind exposure in certain English districts, is the text of Davies' article. He gives the facts as regards the Isle of Man, showing that the conditions there do not bear out Gordon's views. In fact, if the wind theory is true, the regions in that island which give the least rate of phthisis should give the highest, and he can not find anything that supports the theory that strong winds are accountable for the peculiar distribution of disease in the Isle of Man, whatever may be the cause elsewhere. Phthisis among women and children who shut themselves up in small cabins can not properly be attributed to wind exposure, though it is done to escape the inclemency of the winds; it is due to vitiated atmosphere.

Thyroid Extract as a Remedy, with Illustrative Cases. P. BLAIKIE SMITH.—The author reports several cases where thyroid extract was used for conditions other than myxedema with remarkably favorable results. One was a case of extensive carcinoma, in which many of the nodules disappeared and there was a general temporary improvement. In other similar cases, however, the same treatment seemed to be ineffective. Another case was that of a child three years old, suffering from edema and bullæ, with constant relapses. The case proved refractory to all radical treatment, but thyroid extract in 1/3 gr. doses two or three times a day, given as a last resort, was extremely effective. The third case was one of obesity associated with Bright's disease, in which the effects were perhaps less unusual, but were very striking.

The Lancet, February 16.

Remarks on Agglutination by Plague Blood. E. KLEIN.—Various observers have noticed that the blood of persons convalescent from plague possesses the power of agglutinating plague bacilli in cultures. Klein has investigated the case and finds certain difficulties. In the first place good emulsion is hard to make. The plague bacilli are naturally aggregated in cultures and a uniform distribution of micobes is not as easy to bring about as with some other organisms. He tried to make a workable emulsion from gelatin surface cultures, by distributing the gelatin growth in physiologic salt solution, and he finally succeeded. The emulsion in bouillon, as generally used for other bacilli, is not applicable since it is not itself without effect in causing agglutination of plague bacilli. Experiments with the salt solution with the blood of rats that had been injected with Haffkine's prophylactic, and later with living plague cultures, showed a very marked agglutination in ten minutes, and control experiments with normal human blood and normal mouse's blood showed no such effects.

Deutsche Med. Wochenschrift (Leipsic), February 7 and 14.

Bacteriology of Articular Rheumatism. F. MEYER.—Two years of efforts to cultivate a micro-organism from the blood or joint effusion in cases of articular rheumatism resulted negatively. But when mucus taken from the tonsils was employed no difficulty was experienced in cultivating a peculiar, delicate streptococcus which induced a seropurulent, usually sterile, joint affection in animals, not leading to sepsis. The lesions showed a special affinity for the serous membranes and the endocardium.

Bactericidal Power of Electric Light. H. STREBEL.—A series of tests and experiments is described which, the writer states, formed the first scientific demonstration that the bactericidal power of light is exclusively the property of the short-wave rays beyond the violet—the ultraviolet. He describes an improved technique for radiotherapy, enhancing the bactericidal power of the light by using, instead of the ordinary carbon arc-light, electrodes made of a combination of aluminum, cadmium, zinc and carbon, and cooling the compressorium with a stream of compressed air, determining the power of the light not by the visible appearance, but by its action on aristo paper.

February 14.

Operating in the First Moments of Ether Inhalation. F. SUDECK.—In about two hundred operations at Hamburg, the surgeon began his work after the first or second deep inhalation of ether by the patient, without waiting for absolute narcosis. It was found that complete unconsciousness accompanies the first inhalations, if the patient's attention is diverted from the operation, if the instruments are concealed, etc. Brief operations can thus be concluded with the minimum of ether, and before the patient reaches the stage of agitation. Kuemmell has thus amputated a leg or arm in feeble, elderly persons, with no intimation on their part that they experienced pain. Occasionally the patients say that they feel the surgeon's touch, but no pain. Harless is quoted as saying that the ether "may reach the brain through the lamina cribrosa at the first whiffs, as a brief anesthesia with unconsciousness is observed at this time, which is sufficient for a rapid operation." During the extirpation of glands in the axilla the raised abducted arm showed no voluntary nor reflex tendency to adduction, which testifies to the effectiveness of the insensibility induced by the first whiffs of ether.

Operative Treatment of Pulmonary Tuberculosis. H. SARFERT.—Experiences with 150 cadavers showed that the best route for surgical intervention on the lung is by resection of the second rib, detaching the pleura with the hand as one cuts the pages of a journal, freeing the lung without opening the pleura, and after locating the lesion by palpation, opening the cavity with the knife or thermo-cautery. No large vessels are encountered and the operation is remarkably simple. It is indicated in case of a single large cavity, with the remainder of the lungs and the large bronchi very little, if any, affected, and no other organs involved. Sarfert thus operated on a woman of 40 and found the conditions exactly as favorable as in the cadaver. Solid adhesions were found after resection of the second rib, and the loss of blood was remarkably slight, both in the wound in the blunt detached lung and in the newly formed layers of connective tissue on lung and pleura. The position and size of the cavity were readily ascertained and it was extensively opened. There was no asphyxia nor dyspnea. The large cavity communicated with a second smaller one; both were easily tamponed. The wide gap left between the apex of the lung and the thorax gradually closed by granulations. Neither the previous hectic fever nor hemoptysis recurred. The wound had closed in three months to a granulating strip 3cm. wide with a crater 3cm. deep. After two months of euphoria the patient succumbed to an attack of pneumonia in the lower lobe of the other lung. The autopsy showed that very few tubercular nodules were scattered over the lung that had been operated on; there were no evidences of the cavities. The apex had become transformed into tough connective tissue, but the remainder of the lung was air-tight.

Muenchener Med. Wochenschrift, January 29.

Clitoris Crises in Tabes. G. KOESTER.—A case of this rare complication of tabes, of which Pitres has published three cases, is described at length. The clitoris crises correspond to gastric crises and also to the genital disturbances in men during the course of the affection.

Influence of High Temperature on Milk. H. CONRADI.—Heating milk above 80 C. produces a permanent chemical or physical change in its constitution beyond that usually recognized. The normal coagulating point of the milk by calcium and similar salts is diminished by 8 to 12 degrees, while the action of rennet is retarded.

Prophylaxis of Venereal Diseases Among Students. W. SCHOLTZ.—The pamphlet warning against the dangers of venereal disease which is now distributed among the students of Germany when they enter the universities, has already commenced to bear fruit, as Scholtz is able to prove by statistics from the clinics, etc.

February 12.

Tendon Transplantation in Case of Paralytic Deformities. E. KUNIK.—The remarkable benefits to be derived from this tendon transplantation in cases of old paralytic deformities are extolled by Kunik, who states that the number of

actually hopeless cases is being gradually reduced. The tendons are lengthened, shortened or transplanted as indicated, but the operation is not undertaken so long as a trace of spontaneous improvement is apparent under massage, baths and electricity. When the condition has been stationary for six to twelve months or the deformity is rapidly increasing, the operation is indicated.

Treatment of Perineuritis of the Sacral Plexus. A. GUTTENBERG.—The prognosis of this affection is favorable even in elderly persons. General tonic treatment should be supplemented by local massage, the patient in the position allowing easiest access to the affected nerves. The massage should only last a few minutes and should be very gentle, stroking the thickened cords or nodules from the side toward the sacrum, slowly increasing the pressure. The limb is then repeatedly hyperflexed to stretch the sacral nerves and promote absorption. Neurasthenic conditions are benefited usually by wet cold packs, and gentle gymnastics and baths cure the muscular atrophy. In patients with a suspicion of thrombosis and in elderly persons digital massage is substituted by a rectal injection of a pint of tepid water retained for a few minutes, and repeated twice a day. By these means improvement is soon evident. The pains and other disturbances disappear and with them the anemia and concomitant symptoms of irritation of the nervous system. Five cases are described; pains, weakness, trembling of the lower limbs, accompanied by anemia and a palpable "Rosenkranz" swelling or general thickening of the nerve were the most prominent symptoms.

Wiener Klinische Rundschau, February 10.

Thickening of Peripheral Nerves from a Cold. H. PROPPER.—A case is described of palpable perineuritis in consequence of trauma and two others of peripheral neuritis due to rheumatic influences. In the latter the long saphenous nerve was palpably thickened. Reviewing similar cases in the literature, Propper asserts that peripheral neuritis from a primary cause—catching cold—is of frequent occurrence. The more exposed nerves, such as the facial, cervicobrachial, sciatic and crural nerves and the saphenous are especially sensitive. They are sometimes thickened to twice their normal size. These swellings of the nerves from rheumatic influences may be either unilateral or bilateral. In a few cases the tendon reflexes were exaggerated with these purely peripheral affections.

Wiener Klin. Wochenschrift, February 14.

Mechanical Treatment of Certain Varieties of Vertigo. A. URBANTSCHITSCH.—The dizziness that occurs when one whirls the body on the vertical axis can be overcome by practice. In the same way one can become accustomed to the dizziness caused by swinging the head around, etc. For two years the writer has been applying this principle to the treatment of vertigo, with remarkable success. He describes two typical cases consecutive to an operation for the cure of caries of the temporal bone, in which the horizontal semicircular canal had probably been injured. In one the vertigo after ten weeks was still so intense that it was impossible for the patient to ascend stairs or to walk alone. Systematic exercises, swinging the head around, repeated several times a day, stopping when distinct dizziness appeared and waiting for it to subside improved the patient so much in two weeks that he was able to balance his one-wheeled, heavy scissors-grinding machine as before without trouble.

St. Petersburg Med. Wochenschrift, January 26.

Carcinoma Under Thirty-two. W. VIERHUFF.—Five patients between 28 and 32 years of age have been in Vierhuff's charge during the last few years, all with carcinoma of the stomach or intestines. The first and most constant symptom was good appetite with repugnance to food. At every attempt to eat nausea and discomfort in the stomach were experienced. Weakness and emaciation were frequently noted before the gastric contents showed abnormal conditions. Intermittent fever was also observed, appearing with symptoms simulating malaria. Kusick and Treyman have each observed three cases of malignant neoplasms. In the latter's cases the age was between 26 and 29, and all were located at the portio. In spite of apparently favorable conditions the cases terminated fatally in one to nine months to two and one-half years. Three cases of carcinoma of the rectum in still younger girls were also rapidly fatal.

Vratch (St. Petersburg), XXI, 48, 51 and 52, 1900.

Massage-Plaster Open Splint for Fractures. PILETZKY.—The plaster splint used by Piletzky for simple fractures is made of a bag of gauze filled with plaster mixed with carded flax. An opening is left over the region of the fracture and through it the spot is massaged, commencing the very first day. After eight to twelve days the splint is removed for massage of the entire limb and passive movements. At the end of two weeks active movements are commenced. The massage is done twice a day for ten to fifteen minutes. Nine cases are described, demonstrating the exceptionally rapid recovery, the patients walking in twelve to thirty-three days after fracture of a bone in the leg and in twenty to twenty-seven days after fracture of the femur.

Semana Medica (Buenos Ayres), December 20.

Sodium Hyposulphite in Bubonic Plague. J. PENNA.—Six patients severely ill with bubonic plague were treated by subcutaneous injections, in the vicinity of the infarcts, of 1 gm. of sodium hyposulphite to the cubic centimeter, every three hours. The bubo became gangrenous in two cases, one of them fatal. The remainder recovered. Penna's previous experiences with this treatment in twenty cases were described in THE JOURNAL of January 19, p. 220.

Bulletin de l'Acad. de Med. (Paris), January 29 and February 5.

Sterilization of Cocain. RECLUS.—One gram of cocain hydrochlorate in 100 grams of distilled water is distributed in small vials which are plugged with cotton and placed in a water-bath. The temperature is gradually raised to 100 C. and the boiling continued for half an hour. This method has proved more satisfactory than that of Tyndall's in three years' experience. The cocain remains intact and retains all its properties, the light-rotating power is not altered nor is the anesthetic action modified.

February 5.

Glycosuria and Diabetes of Dyspeptic Origin. A. ROBIN.—These conditions are frequently misunderstood and erroneously treated. Dyspeptic glycosuria is characterized by temporary, irregular, comparatively insignificant glycosuria during digestion only. It is frequently accompanied by transient albuminuria and always by an exaggeration of the general nutritive interchanges, nitrogenous and nervous. This glycosuria is noted in dyspeptics with a good or even an exaggerated appetite, with the stomach distended, with hyperchlorhydria, and the liver large and more or less tender. Accessory symptoms dependent on the primary cause are neurasthenia, vertigo, phosphatic, milky urine, dermatoses, cardiac phenomena and profuse sweats. It may develop into actual diabetes, but yields usually to suitable treatment of the hypersthenic dyspepsia. It is probably due to two causes: The exaggerated reflex excitation of the duodenum, etc., by the passage of a hyperacid chyme, stimulating the biliary function by reflex action, and the direct excitation of the liver cells by the elaborated or transformed glycogen. Dyspeptic glycosuria thus differs completely from the alimentary variety and from latent diabetes. It is the result of excitation while the others are the result of insufficiency. But the frequently repeated excitation may in time lead to genuine diabetes—that is, continuous excitation. Dyspepsia may be the prime cause in many cases of diabetes, and this explains the gravity of dyspepsia in a diabetic. The treatment is merely that of ordinary hypersthenic dyspepsia. In mild cases sedative medication is sufficient; in others, an exclusive milk diet may be required. If the glycosuria persists, the functional activity of the liver must be modified with antipyrin combined with sodium bicarbonate, or sodium arseniate and potassium arsenite, or lithium carbonate, codein, opium, belladonna, valerian, etc. One or two doses of 50 to 75 cg. of antipyrin combined with 50 cg. of sodium bicarbonate or the judicious use of sodium arseniate are usually sufficient. In case of dyspeptic diabetes or considerable glycosuria, the activity of the liver must be reduced at once, and the following three-day course of treatment instituted: First, the diabetic regime, suppressing all raw and acid foods. One and one-half

hours before breakfast and dinner a powder of 50 cg. to 1 gm. of antipyrin and 50 to 75 cg. of sodium bicarbonate in seltzer water should be taken and during meals no beverage but Vichy water from the Lardy spring. After meals one of twelve powders containing 4 gm. each of calcined magnesia and sodium bicarbonate mixed with 6 gm. of prepared chalk should be given. If gastric crises or pyrosis occur, or sensations of burning, constriction or dragging-down are felt in the epigastrium in the intervals between meals, one of ten powders should be taken containing 15 gm. of calcined magnesia, 7 gm. of bismuth subnitrate, 7 gm. of prepared chalk, 5 cg. of codein and 10 gm. of sodium bicarbonate. As soon as the sugar disappears from the urine, this medication can be suspended and treatment addressed solely to the hyperasthenic dyspepsia be inaugurated, commencing with a strict milk diet. If the sugar reappears in large amounts the antipyrin treatment must be resumed, but if it is minimal, 15 cg. of lithium carbonate are usually sufficient, taken before breakfast and at night, dissolved in a spoonful of water, to which is added a tablespoonful of a mixture of 5 cg. sodium arseniate in 300 gm. of distilled water. If the irritating action of the arsenic is feared, rectal injection of 5 c.c. of a mixture of 8 gm. of Fowler's solution in 92 gm. of distilled water may be substituted. In old-established cases the treatment of the diabetes and of the dyspepsia should alternate as the symptoms of each predominate. Starches and sugar should be avoided.

Bulletin de la Soc. des Hop. (Paris), January 24 and 31.

Cellular Elements in Pathologic Cerebrospinal Fluid.—Communications from Widal, Sicard, Monod and others announce that the cerebrospinal fluid contains cellular elements, lymphocytes predominating, in chronic affections in which the meninges are involved, and this is especially noticeable in tubercular meningitis, tabes, general paralysis and meningomyelitis. This symptom, indicating an alteration in the arachnopia mater, may in certain cases clear up the diagnosis between a central and a peripheral lesion, or confirm a dubious diagnosis of tabes or general paralysis. The cellular elements were not found in any of the cases of hemiplegia or peripheral neuritis examined, nor in alcoholics nor hysterics. In acute processes such as cerebrospinal meningitis, polynuclear elements predominated, indicating more extreme processes of defense. Lymphocytosis and the causal meningitis have been observed in 11 cases of general paralysis and 7 of tabes, none negative. Meningitis had been noted previously in 11 cases of paralysis and 9 of tabes, but the fluid was not examined.

Presse Medicale (Paris), February 2.

Hygiene of the Ear. LERMOYEZ.—Among the other measures recommended are mentholized olive-oil, 1 to 50, which is stated to be specific for coryza in children. It sterilizes and renders the nasal passages permeable, with no possible danger to the ear as from other substances. The child lies on his back and a few drops of the oil are instilled from a syringe or dropper three times a day. Intense nervous deafness may be caused by reflex action of worms in the intestines. The hearing is also liable to suffer, Lermoyez adds, from prolonged mental exertion in the quiet of the study. The ear hears, but it is the brain that listens, and if the latter is overworked, the hearing suffers.

To Banish the Bacilli from the Mouth and Throat After Diphtheria. MAETHER.—The conclusions of the writer's tests are that peroxid of hydrogen and ammonium carbonate are effective gargles for eradicating lurking bacilli after diphtheria. Ammonium carbonate has the advantage of dissolving the mucous secretions and thus allowing the disinfectant access to the bacteria. Maether recommends a combination of the two, gargling first with a 1 per cent. solution of ammonium carbonate and then with a 10 per cent. solution of commercial peroxid of hydrogen. If bacilli still lurk in the deep crevices of the tonsils, they must be mechanically dislodged with a fine sound.

Revue de Chirurgie (Paris), February.

Ligature of the Abdominal Aorta. P. TILLAUX AND P. RICHE.—The abdominal aorta has been ligated in thirteen cases, with a mortality of 100 per cent. according to the literature. Experiments in this line on animals were reported as early as 1667, and have been numerous during the last century. They prove that ligature of the abdominal aorta is not necessarily fatal, except perhaps in the rabbit. It is followed by anemia and paralysis in the hind legs, but not by gangrene nor permanent paraplegia. In man, the gravity of obliteration of the aorta varies with the cause and extent. It is unsuspected when congenital; but may prove rapidly fatal when of embolic origin. Consecutive gangrene and paralytic phenomena have been observed, the latter ranging from intermittent limping—claudication—to complete paraplegia. In every case of gangrene or persisting paralysis, the obliteration was not restricted to the aorta. In 11 of the 13 clinical cases the aorta was ligated on account of non-sacculated aneurysm, and twice on account of hemorrhage. In 7 the ligature was applied through peritoneum, in 6 by the retro-peritoneal route. Gangrene did not occur in any of the cases; the symptoms of cerebral congestion noted were rare and insignificant and the paralytic phenomena were inconstant, variable and transient. None of the deaths were directly attributable to the operation. Indications for ligature of the abdominal aorta are extremely rare, but study of the cases on record shows that the surgeon need not hesitate when he encounters the indications, as the obliteration of a sound aorta entails merely slight transient disturbances in the circulation, incapable of compromising the vitality of the lower limbs, and transient paraplegic disturbances. The details of all the cases are given, continued through several numbers of the *Revue*.

Study of Osteomalacia. G. GAYET AND L. M. BONNET.—The conclusions of this comprehensive study of osteomalacia are that the affection is due to a disturbance in the nutrition of the bones, consisting in an insufficient supply of lime salts and leading to the softening of the skeleton. This disturbance in nutrition may be local or general. Local osteomalacia is observed after traumatisms, infections of the bones and also in certain nervous affections. The lesions are of the same character in the local and in the general forms, but with variations not explainable by the apparent etiology, the clinical variety nor the extent of the generalization of the affection. There is nothing specific in the pathogenesis, but there are predisposing causes in age, sex, climate, etc. The actual determining cause is still obscure; but the facts that have been observed point to disturbances in the nervous system as the chief factor.

Protection of Raw Surfaces in Laparotomies. E. QUENU AND JUDET.—Since 1895, Quenu has made a practice of covering with serous membrane all the raw surfaces left after a laparotomy. By this means normal conditions are re-established and exudation is prevented. In case of vegetating cysts of the ovaries the entire pelvic cavity is made extraperitoneal by suturing the vesical peritoneum to the sigmoid loop and the peritoneum over the promontory. The method is particularly advantageous in case of salpingitis, supplemented by abdominal drainage if necessary. Traction on the organs brought together by the suture must be carefully avoided. The patients complain less of colic, and drainage can be discontinued in two to four days. Micturition and defecation have never been affected. Only 5 deaths have occurred in Quenu's last 129 operations for salpingitis, and they include one case of tubercular peritonitis, 3 from extension of the preceding pelvi-peritonitis, one from generalization of tubercular peritonitis and one from cachexia due to a renal complication. Tardy digestive disturbances and abdominal pains are less frequent than in the past, which testifies to more perfect intestinal functioning and the absence of adhesions. Post-operative occlusion of the intestines occurred in only one case, in which cure was easily effected by a secondary operation. The writer concludes that with peritonization recoveries are not only more frequent but they are more perfect and permanent.

Surgical Complications of Typhoid Fever. E. LOISON.—In the personal case described, the small intestine became perforated on the sixteenth day of typhoid fever, the patient being

a young soldier. Loison operated fifteen hours later and the patient recovered. Keen's statistics gave the proportion of recoveries after surgical intervention on account of typhoid perforation as 19.3 per cent.; Platt, 20.3 per cent.; Mauger in 1900, 23.3 per cent., and Loison has now collected 16 successfully operated cases with 74 failures, a proportion of 21.6 per cent. The best results have been attained during the first twenty-four hours after perforation or commencement of the peritonitis, but the condition of the patient is the best guide. Subsidence of the primal peritoneal shock must be awaited. In the 16 successful cases, operation was made between the sixth and twelfth hour in 6; between the twelfth and twenty-fourth in 4, at the twenty-sixth in 1 and at the sixtieth hour in another. In Legueu's case a large perforation was found near the ileo-cecal valve. The tissues were too friable for suturing and the place was patched with a graft of omentum. The perforation occurred on the twentieth day and the operation was performed six hours later. The patient, a youth of 15, recovered with a stercoral fistula which healed spontaneously in three weeks. Loison prefers a median incision as more convenient for locating the perforation. If in the small intestine, it is usually near the ileo-cecal valve. Transverse suture is preferable to longitudinal, judging from the results published. If the intestine is very friable it can possibly be sutured to the abdominal wound. Total resection of the loop may sometimes be necessary, but the bad results after extensive resection discourage further attempts in this line. There are only five cases on record in which death occurred in consequence of new perforations after the operation.

Semaine Medicale (Paris), January 30.

The Adequate Dosage Method Applied to Various Nervous Affections. GILLES DE LA TOURETTE.—THE JOURNAL described the details of this method of administering the bromids in epilepsy, Oct. 27, 1900, p. 1120. The results obtained with it have surpassed the most sanguine expectations and the principle is now being applied to other diseases. The method is based on the determination of the actual individual tolerance in each patient, by watching for certain physical signs and symptoms, peculiar to each drug, indicating the *approach* of intolerance. The individual adequate dose thus established is maintained for a length of time sufficient to completely abolish the cortico-motor hyperexcitability of the brain in epilepsy, and with it all tendency to seizures. The three-week period plan is followed, increasing by 1 gm. a week until the proper dose is ascertained, then maintaining it at this point in three-week periods, as for instance: 3, 4, 5; 3, 4, 5; 3, 4, 5 gm. and so on. It is then gradually diminished to final suppression. In this point there is a slight modification of the original method as first published. Other nervous diseases successfully treated in this way have been severe, associated forms of migraine, Menière's vertigo, grippal neuralgia and tic-douloureux. The results emphasize the exceptional benefits to be derived from this "proper-dose method." In a typical case of ophthalmoplegic migraine in a man of 35, for example, the paroxysms recurring frequently, sometimes every week and lasting three or four days, there has been no recurrence since a course of treatment last September. The adequate dose of bromid in this case was found to be 7, 8 and 9; 7, 8, and 9 gm., determined by the pupil sign and general manifestations at the close of the first third week. The complete course for this severe migraine requires about eight to twelve months. Quinin is the specific in Menière's disease.

Centralblatt f. Chirurgie (Leipsic), February 2 and 9.

Direct Suture of the Resected Ureter. A. V. GUBAROFF. In an operation which required resection of 3 cm. of the ureter, the ends were sutured together at once, a small slit downward from the top in the peripheral end allowing it to be fitted over the central end. A stitch at the back and at each side held the parts in position and the slit was sutured as the final step. The patient died thirty-one days later from amyloid degeneration. The ureter was found practically normal with scarcely a trace of the defect and invagination. Absorbable suture material was used, and the stitches were taken lengthwise.

February 9.

Treatment of Injury of the Internal Soft Parts of the Knee. C. LAUENSTEIN.—The writer has found that recovery was more prompt and satisfactory when the extravasated blood was evacuated by puncture, followed by immobilization of the joint for a few weeks. He has found it possible to determine the existence of rupture of the capsular ligament by inserting a bougie through the puncture-opening.

Muscular Transplantation for Contraction of Knee. C. BRUNS.—In three cases of recurrent contraction of the knee after an old, healed infection, Bruns transplanted the tendon of the biceps into the tendon of the quadriceps. The results have been very satisfactory, the contraction and pain are completely abolished and the patients regain normal use of the limb. In one the contraction was consecutive to gonorrheal gonitis, the patient 24 years of age; in another to fungus of the knee in a boy, and in a third, a woman who had been confined to her bed for years on account of the extreme painful contraction of both knees from articular rheumatism. This patient has not been allowed to get up yet, but the knees are now normal.

Queries and Minor Notes.

PHYSICIANS AND THE AUTOMOBILE.

LEAD, S. D., Feb. 22, 1901.

To the Editor:—In considering the purchase of an automobile, will you advise me which one or make is most practicable for a physician's use? Is an electric vehicle better than one of gasoline power? H. S. J.

ANS.—We are unable to advise our correspondent. While the electric automobile seems to us to be too limited in its radius of action for general country practice, it has many advocates, but the gasoline motor seems to be the most popular at the present time. The question of automobiles is an important one and THE JOURNAL will be glad to hear from its correspondents in regard to the matter, especially from those who have had experience in their use. Many are now using the automobile instead of the horse, and it would be interesting to those who are thinking of adopting this mode of conveyance if physicians now using them would give their experience for publication in these columns.

LABORATORY INOCULATION.

IOWA CITY, IOWA, Feb. 14, 1901.

To the Editor:—Will you inform me whether there have occurred, to your knowledge, any cases of accidental inoculation with diphtheria in the laboratory while working with cultures, and references? L. F. G.

ANS.—Yes, such accidents have occurred, and dangerous attacks of diphtheria have been the result. Fortunately they are rare and appear to depend on purely accidental conditions. We can not give definite references.

MALARIA DATA

YOAKUM, TEXAS, Feb. 13, 1901.

To the Editor:—In THE JOURNAL of the 9th, I note reference to a paper by Wells on malaria, also by Edwards, Preble and Favill, and will be very much obliged if you will give me the name and address of the publishers of each of the papers. W. S.

ANS.—The articles were published in the *Chicago Medical Recorder* for January. Address Medical Recorder Publishing Co., Pullman Bldg., Chicago.

PRACTICE IN ILLINOIS.

COLUMBIA, MO., Feb. 18, 1901.

To the Editor:—What is the law governing practitioners in Illinois? If one holding a diploma has to go before the state board, give address of one of the members.

ANS.—This question was answered in THE JOURNAL of February 16, to which the correspondent is referred. The secretary of the State Board of Health is Dr. J. A. Egan, Springfield, Ill.

PRACTICE IN KENTUCKY.

KANSAS CITY, MO., Feb. 26, 1901.

To the Editor:—Kindly give the requirements of the State Board of Health of Kentucky regulating the practice of medicine in that state, also name and address of secretary of the board. R. J. S.

ANS.—A diploma from a reputable medical college, endorsed as such by the State Board of Health; registration with the county clerk after receiving certificates from the board is essential. Dr. J. N. McCormack, Bowling Green, Ky., is secretary of the State Board of Health.

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Books Received.

Acknowledgment of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

SYPHILIS OF CHILDREN IN EVERY-DAY PRACTICE. By George Carpenter M.D., Lond., Physician to the Evelina Hospital for Sick Children, London. Cloth. Pp. 110. Price, $1.25. New York: Wm. Wood & Co. 1901.

OBSTETRIC AND GYNECOLOGIC TEACHING. By Edward P. Davis, A.M., M.D., Professor of Obstetrics in the Jefferson Medical College, Philadelphia. Illustrated. Pp. 402. Price, $1.75. Philadelphia and London: W. B. Saunders & Co. 1901.

AN INTRODUCTION TO PHYSIOLOGY. By William T. Porter, M.D., Associate Professor of Physiology in the Harvard Medical School. Cloth. Pp. 314. Price, $2.50. Cambridge, Mass.: The University Press. 1901.

THE HISTORY OF ANCIENT GYNECOLOGY. By W. J. Stewart McKay, M.D., M.Ch., B.Sc., Senior Surgeon to the Lewisham Hospital for Women and Children, Sydney. Cloth. Pp. 302. Price, $3.00. New York: Wm. Wood & Co. 1901.

TRANSACTIONS OF THE LUZERNE COUNTY MEDICAL SOCIETY For the Year Ending Dec. 31, 1900. Volume viii. Paper. Pp. 220. Wilkes-Barre, Pa.: E. B. Yordy Co. 1900.

INTERNATIONAL CLINICS. A Quarterly of Clinical Lectures and Especially Prepared Articles on Medicine, Neurology, Surgery, Therapeutics, Obstetrics, Pediatrics, Pathology, Dermatology, Diseases of the Eye, Ear, Nose and Throat, and Other Topics of Interest to Students and Practitioners. By Leading Members of the Medical Profession Throughout the World. Edited by Henry W. Cattell, A.M., M.D., Philadelphia; John B. Murphy, M.D., Chicago; Alexander D. Blackader, M.D., Montreal; H. C. Wood, M.D., Philadelphia; T. M. Rotch, M.D., Boston; E. Landolt, M.D., Paris; Thomas G. Morton, M.D., Philadelphia; Charles H. Reed, M.D., Philadelphia; J. W. Ballantyne, M.D., Edinburgh; John Harold, M.D., London. With Regular Correspondents in Montreal London, Paris, Leipsic and Vienna. Volume iv. Tenth Series. 1901. Cloth. Pp. 312. Price, $2.00. Philadelphia: J. B. Lippincott Co. 1901.

THE RETROSPECT OF MEDICINE. A Half-Yearly Journal Containing a Retrospective View of Every Discovery and Practical Improvement in the Medical Sciences. Edited by James Braithwaite, M.D., Lond., Consulting Obstetric Physician and Surgeon to the Leeds General Infirmary; F. F. Trevelyan, M.D., Lond., B.Sc., M.R.C.P., Assistant Physician to the Leeds General Infirmary. Volume 122. July-December, 1900. Issued January, 1901. Cloth. Pp. 442. Price, $1.50. London: Simpkin, Marshall, Hamilton, Kent & Co., Ltd. Edinburgh: Oliver & Boyd. Dublin: Hodges, Figgis & Co., and Fannin & Co. Leeds: W. Brierley.

A SYSTEM OF PRACTICAL THERAPEUTICS. Edited by Hobart Amory Hare, M.D., Professor of Therapeutics and Materia Medica in Jefferson Medical College, Philadelphia. Second Edition, Revised and Largely Rewritten. Vol. I. General Therapeutic Considerations—Prescription-Writing—Remedial Measures Other Than Drugs—Preventive Medicine—Diathetic Diseases and Diseases of Nutrition. With Illustrations. Cloth. Pp. 856. Price, $5.00 net. Philadelphia and New York: Lea Brothers & Co. 1901.

REPORT OF THE COMMITTEE ON THE PROTECTION OF NORTH AMERICAN BIRDS for the year 1900. By Witmer Stone; and Results of Special Protection to Gulls and Terns Obtained Through the Thayer Fund. By William Dutcher. Paper. Pp. 104. Extracted from "The Auk," January, 1901.

FIFTH REPORT OF THE COLORADO STATE BOARD OF HEALTH. Covering the Period from Nov. 15, 1894, to Nov. 15, 1900. G. E. Tyler, M.D., Denver, Colo. Cloth. Pp. 223. Denver, Colo.: Smith Brooks Printing Co. 1900.

UTERINE TUMORS: Their Pathology and Treatment. By W. Roger Williams, Fellow of the Royal College of Surgeons. Cloth. Pp. 359. Price $3.00 net. New York: William Wood & Co. 1901.

THE JOHNS HOPKINS HOSPITAL REPORTS. Vol. viii. Paper. Pp. 397. Baltimore, Md.: The Johns Hopkins Press. 1900.

TRANSACTIONS OF THE MISSISSIPPI VALLEY MEDICAL ASSOCIATION. Twenty-sixth Annual Session held at Asheville, N. C., Oct. 9, 10 and 11, 1900. Vol. ii. Cloth. Pp. 475. Printed for the Association. 1900.

DISEASES OF THE ANUS AND RECTUM. By D. H. Goodsall, F.R.C.S. (Eng.), Senior Surgeon (late house surgeon) to St. Mark's Hospital for Fistula and Other Diseases of the Rectum, and W. Ernest Miles, F.R.C.S. (Eng.), Surgeon (out-patients) to the Gordon Hospital for Diseases of the Rectum. In two Parts (illustrated). Part 1. Cloth. Pp. 311. Price, $2.50. London, New York and Bombay: Longmans, Green & Co. 1900.

FIFTH ANNUAL REPORT OF THE BOARD OF MANAGERS OF THE SPRINGFIELD STATE HOSPITAL OF THE STATE OF MARYLAND, Sykesville, Md. To His Excellency the Governor of Maryland, October 1, 1900. Paper. Pp. 38. Baltimore: Sun Book and Job Printing Office. 1901.

REPORT OF THE COMMISSION OF EDUCATION for the Year 1898-99. Vol. 2. Cloth. Pp. 1269. Washington: Government Printing Office. 1900.

New Patents.

Patents of February 5 and 12 of interest to physicians:

667,357. Massage device. August Andreae, Frankfort-on-the-Main, Germany.

667,358. Manufacturing acetic acid. Johann Behrens, Bremen, Germany.

667,182. Druggists' label case or cabinet. Wm. W. Billingslea, Mason, Ga.

667,487. Vaporizer. Frank P. Boland, Providence, R. I.

667,491. Atomizer. Oram H. Brigham, Chatsworth, Ill.

667,621. Obstetrical device. Hannah C. Fleming, Falls City, Neb.

667,518. Capsuling machine. Eli D. Harrington, Westfield, N. Y.

667,447. Bust developer. Harry L. Miller, Chicago, Ill.

667,260. Foot-rest for invalid-beds. Ellen F. Stetson, Boston, Mass.

667,469. Apparatus for perfuming or fumigating rooms. John W. Tighe, Exeter, England.

667,481. Respiratory mask or helmet. Charles H. Wood, Trenton, N. J.

34,024. Design; box for hypodermic needles. Fairleigh S. Dickinson, Bayonne, N. J.

34,042. Design; bed pan. Daniel Hogan, New York, N. Y.

667,759. Nitrocellulose, or similar substance, and making same. David Bachrach, Baltimore, Md.

667,869. Surgical chair. Charles F. Davidson, Canton, Ohio.

667,768. Splint. Revra De Puy, Warsaw, Ind.

667,840. Respirator. Samuel Guthrie, San Francisco, Cal.

667,726. Curette. Charles W. McDade, Faribault, Minn.

668,055. Disinfecting and fumigating apparatus. John H. Semmes, Meridian, Miss.

667,961. Medicinal vaporizer. Charles R. Tefft, Utica, N. Y.

34,057. Design; strand-supporting card for fumigators. John W. Castle, Leominster, Mass.

Copies of above patents may be obtained for 10 cents each by addressing John A. Saul, Solicitor of Patents, Fendall Building, Washington, D. C.

Change of Address.

J. P. Price, Medical College, Memphis, Tenn., to Westbrook, Ark.
Nina D. Polson, 676 Jackson Blvd., to 5429 Washington Ave., Chicago, Ill.
Frank Rattan, Antioch, Cal., to Martinez, Cal.
J. J. Ross, Louisville, Ky., to Meshack, Ky.
R. A. Stewart, Dorrance, Kan., to Idana, Kan.
J. E. Thompson, La Grande St., Pittston, Pa., to Taylor, Pa.
S. Tirman, 491 E. Houston St., New York City, to 522 S. 10th St., Richmond, Va.
C. L. Versea, 131 Howard, New Orleans, La., to Bryan, Tex.
H. C. Watkins, Aberdeen, Wash., to Cosmopolis, Wash.
J. S. Adams, 319 South 18th St., to 767 North 40th St., Philadelphia, Pa.
R. H. Anderson, 108 West 40th St., to 162 West 46th St., New York City.
H. J. Andrews, 901 South Cherry St., to 632 South College St., Nashville, Tenn.
M. R. Bailey, Philadelphia, Pa., to East Peoria, Ill.
M. J. Barlow, 509 Lee Ave., Nashville, Tenn., to Central Point, Ark.
N. P. Barnes, 138 6th St., N. E., to 212 Maryland Ave., N. E., Washington, D. C.
C. W. Bartlett, East Dorset, Vt., to North Bennington, Vt.
G. Blech, 163 State St., to 240 Blue Island Ave., Chicago, Ill.
H. H. Bridges, 1804 Conti St., New Orleans, La., to McNeill, Miss.
Marion Burke, 969 San Pasqual St., Pasadena, Cal., to Colorado Springs, Colo.
W. Cason, 131 Howard St., New Orleans, La., to 1300 Grammont St., Monroe, La.
F. E. Christopher, 1654 Gravier St., to 730 South Galvez St., New Orleans, La.
H. W. Clements, Hahira, Ga., to Lenox, Ga.
H. Cook, Pewamo, Mich., to Westphalia, Mich.
E. E. Cravens, Ellmott, Tex., to Licking, Mo.
J. R. Davis, 451 Pontiac St., Memphis, Tenn., to Dennis, Miss.
D. W. Detwiler, Moravia, Ia., to Oskaloosa, Ia.
G. F. Eames, 249 Newberry St., to 261 Beacon St., Boston, Mass.
J. C. Egelston, City Hospital, to 2425 Tracy Ave., Kansas City, Mo.
J. M. Evans, San Pedro de Ocampa, Mexico, to Corpus Christi, Tex.
Fry Walter, 2655 Bernard St., to 424 South Garrison Ave., St. Louis, Mo.
W. F. Gable, 627½ North High St., to 12 East Russell St., Columbus, Ohio.
J. J. Garver, Station A, North Pennsylvania St., Indianapolis, Ind.
E. F. Gough, Barnes Medical College, St. Louis, Mo., to Commerce, Tex.
R. Grace, 1750 Grace St., to Hotel Windemere, 56th and Cornell Ave., Chicago, Ill.
W. R. Granger, 2803 Oak Ave., Newport News, Va., to Gloucester, Va.
R. P. Higgins, 71 South Washington St., Wilkes Barre, Pa., to New Castle, Pa.
S. S. Hindman, State Prison, Nashville, Tenn., to Florence, Tenn.
J. A. Horigan, New Ridge Bldg., to 3100 Main St., Kansas City, Mo.
A. Lenty, Larchwood, Ia., to Hull, Ia.
Lewis Chemical Co., 165 West 50th St., to 161 West 36th St., New York City.
H. D. Marcus, Philadelphia, Pa., to 1719 Pacific Ave., Atlantic City, N. J.
D. C. Moriota, Saratoga, N. Y., to Saratoga Springs, N. Y.
O. K. Newell, 13 Central Park St., West, to 212 2nd Ave., New York City.
W. E. Person, 135 Spring St., to 84 East Cain St., Atlanta, Ga.
Jos. Pestal, 2328 Michigan Ave., to 2441 Prairie Ave., Chicago, Ill.
C. W. Reynolds, Holton, Kan., to Malcolm, Ia.
B. W. Rogers, Milton Junction, Wis., to 539 Van Buren St., Milwaukee, Wis.
P. D. Rothwell, Cooper Bldg., to 58 West Ellsworth St., Denver, Colo.
J. L. Salinger, 1510 North 8th St., to Philadelphia Medical Journal, 1716 Chestnut St., Philadelphia, Pa.
Nellie Schenck, 617 Walnut St., Knoxville, Tenn., to Rugby, Tenn.
H. P. Schlansky, 119 East 89th St., to 91 Madison St., New York City.
C. H. Shelby, 901 Stevenson Ave., Nashville, Tenn., to 20 Echols St., Memphis, Tenn.
J. R. Shepnard, 129 Howard St., New Orleans, La., to Lodi, Tex.
J. B. Sickler, Peckville, Pa., to Sea Breeze, Fla.
J. S. Smith, Dewey Hts. Sanitarium, New Albany, Ind., to Crescent Hill, Ky.
H. R. Stowe, 101 Washington Ave., Northampton, Mass., to P. O. Box 943, Worcester, Mass.
A. F. Stotts, Marshalltown, Ia., to Medico-Chir. Hospital, Philadelphia, Pa.
R. E. Swigart, Cleveland, Ohio, to Giffin, Ohio.

Willis Walley, St. Louis, Mo., to Grafton, Miss.
C. H. Whitman, 431½ South Spring St., Los Angeles, Cal., to 902 Jackson St., Omaha, Neb.
A. C. Wildhagen, 19 Mill St., to 45 John St., Charleston, S. C.
W. Wilson, Indianapolis, Ind., to Yankeetown, Ind.
A. E. Wrensch, 17 North Calhoun St., to 1534 West Lexington St., Baltimore, Md.
J. H. Yelowski, 572 Blue Island Ave., to 709 Milwaukee Ave., Chicago, Ill.
G. W. Yeaton, Box 474, Hanover, N. H., to 66 North State St., Concord, N. H.

The Public Service.

Army Changes.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., Feb. 14 to 20, 1901, inclusive:

George W. Adair, major and surgeon, U. S. A., from Fort Sheridan, Ill., to San Francisco, Cal., en route for assignment in the Division of the Philippines.

Bailey K. Ashford, lieutenant and asst.-surgeon, U. S. A., to accompany recruits from Fort Slocum, N. Y., to the Presidio of San Francisco, Cal., and return to his proper station.

Dallas Bache, colonel and asst.-surgeon-general, U. S. A., leave of absence on account of sickness.

Guy G. Bailey, acting asst.-surgeon, leave of absence extended.

Charles M. Gandy, captain and asst.-surgeon, U. S. A., from Fort Slocum, N. Y., to San Francisco, Cal., en route for assignment in the Division of the Philippines.

John J. Gilhuley, acting asst.-surgeon, from Bridgeport, Conn., to temporary duty in the Department of the East.

Charles R. Greenleaf, colonel and asst. surgeon-general, U. S. A., from duty in the Division of the Philippines, to take effect June 1, 1901, then to proceed to San Francisco, Cal., for duty as chief surgeon.

Frederick C. Jackson, acting asst.-surgeon, now in San Francisco, Cal., to temporary duty in the Department of California.

William P. Kendall, major and surgeon, Vols., from further duty in the Division of the Philippines to duty at Fort Slocum, N. Y.

John S. Marshall, dental surgeon, U. S. A., from Washington, D. C., to Philadelphia, Pa., on official business.

Edward B. Moseley, major and surgeon, U. S. A., from the Division of the Philippines to duty at Fort Sheridan, Ill.

Robert T. Oliver, dental surgeon, from Washington, D. C., to Philadelphia, Pa., on official business.

George H. Penrose, major and surgeon, Vols., to temporary duty in the Department of California.

Walter Reed, major and surgeon, U. S. A., member of a board convened at the Army Medical Museum, Washington, D. C., to examine candidates for appointment in the Medical Department of the army.

Navy Changes.

Changes in the Medical Corps of the navy for the week ended Feb. 23, 1901:

Asst.-Surgeon R. C. Holcombe, detached from the *Glacier*, and to duty with detachment of marines at Pollok, P. I.

Surgeon J. W. Ross, U. S. N., retired by special order Department of Cuba, Feb. 15, 1901, to report to the chief sanitary officer, City of Havana, for duty.

Health Reports.

The following cases of smallpox, cholera and plague have been reported to the Surgeon-General, U. S. Marine-Hospital Service, during the week ended Feb. 23, 1901:

SMALLPOX—UNITED STATES.

California: Los Angeles, Feb. 2-9, 1 case; San Francisco, Feb. 2-9, 7 cases.
Florida: Jacksonville, Feb. 9-16, 5 cases.
Illinois: Chicago, Feb. 9-16, 14 cases.
Kansas: Wichita, Feb. 9-16, 9 cases.
Louisiana: New Orleans, Feb. 9-16, 4 cases, 4 deaths.
Michigan: Manistee, Feb. 9-16, 3 cases.
Minnesota: St. Paul, Jan. 26-Feb. 9, 8 cases.
New Hampshire: Manchester, Feb. 9-16, 1 case.
New York: New York City, Feb. 9-16, 25 cases, 6 deaths.
Ohio: Ashtabula, Feb. 9-16, 3 cases; Cleveland, Feb. 9-16, 48 cases; Youngstown, Feb. 9-16, 1 case.
Pennsylvania: Allegheny City, Feb. 9-16, 3 cases; Erie, Feb. 9-16, 1 case.
South Carolina: Greenville, Feb. 9-16, 1 case.
Tennessee: Memphis, Feb. 9-16, 19 cases, 1 death; Nashville, Feb. 9-16, 9 cases.
Wisconsin: Green Bay, Feb. 10-17, 1 case; Milwaukee, Feb. 8-16, 1 case.

SMALLPOX—FOREIGN.

Belgium: Antwerp, Jan. 19-26, 1 death.
Great Britain: Bradford, Jan. 6-13, 15 cases, 2 deaths.
Italy: Naples, Jan. 20-30, 26 cases, 2 deaths.
Mexico: City of Mexico, Jan. 27-Feb. 3, 1 death.
Russia: St. Petersburg, Jan. 19-26, 8 cases, 1 death; Odessa, Jan. 19-26, 13 cases, 8 deaths.
Scotland: Glasgow, Jan. 25-Feb. 8, 34 deaths.
Straits Settlements: Singapore, Dec. 22-29, 1 death.

YELLOW FEVER.

Cuba: Havana, Feb. 2-9, 3 cases, 1 death.

PLAGUE.

China: Hongkong, Jan. 5-12, 2 deaths.
Japan: Formosa, Tainan, Jan. 1-16, 28 cases, 22 deaths.

CHOLERA.

Straits Settlements: Singapore, Dec. 22-29, 16 deaths.

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MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

The qualifications for membership require that the applicant be a member, in good standing, of a state or local medical society entitled to send delegates to the annual meeting of the AMERICAN MEDICAL ASSOCIATION. A list of these societies will be sent on request. Applications must be accompanied with a certificate showing that the applicant is a member of a recognized society, and should be sent with the annual dues—five dollars—to the treasurer, Dr. Henry P. Newman, 100 Washington Street, Chicago. Members receive THE JOURNAL free. Subscribers to THE JOURNAL may become members of the ASSOCIATION without additional expense if they are members of medical societies recognized by the ASSOCIATION. Those desiring to have their names transferred from the subscription to the membership lists should send certificates as above, with a receipt for their subscription to THE JOURNAL, covering the current fiscal year.

FISCAL YEAR.

The fiscal year of the AMERICAN MEDICAL ASSOCIATION is from January 1 to December 31; and the annual dues paid by a new member cover only the fiscal year, no matter at what time of year the membership is obtained. Those who pay their dues and join the ASSOCIATION at the annual meeting in June, for instance, pay only for the fiscal year which ends with the December following, and the annual dues for the following fiscal year are payable the succeeding January, at which time the treasurer sends a statement to each member. Such members, however, are entitled to THE JOURNAL for the full year, even though the membership be not continued.

PAPERS READ AT THE ANNUAL MEETING.

"Every paper received by this ASSOCIATION and ordered to be published, and all plates or other means of illustration, shall be considered the exclusive property of the ASSOCIATION. . . . The Board of Trustees shall have full discretionary power to omit from the published transactions, in part or in whole, any paper that may be referred to it by the ASSOCIATION or either of the Sections, unless specially instructed to the contrary by vote of the ASSOCIATION." (From Article V of the By-laws.)

NEWS.

Our readers are requested to send us items of news of a medical nature, also marked copies of local newspapers containing matters of interest to members of the medical profession. We shall be glad to know the name of the sender in every instance.

ORIGINAL PAPERS.

Articles are accepted for publication with the understanding that they are contributed solely to this journal.

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Half-tones, zinc etchings and other illustrations will be furnished by THE JOURNAL when photographs or drawings are supplied by the author.

ADVERTISEMENTS.

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CHANGE OF ADDRESS.

In ordering a change of address it is important that both the old and new addresses be given.

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Remittances should be made by check, draft, registered letter, money or express order. Currency should not be sent, unless registered. Stamps in amounts under one dollar are acceptable. Make all checks, etc., payable to "JOURNAL AMERICAN MEDICAL ASSOCIATION," except those for annual dues. These should be made payable and sent direct to the Treasurer, Dr. Henry P. Newman, 100 Washington Street, Chicago.

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